RIGOL
Beyond Measure

RIGOL T&M Instruments Overview

RIGOL TECHNOLOGIES,INC.

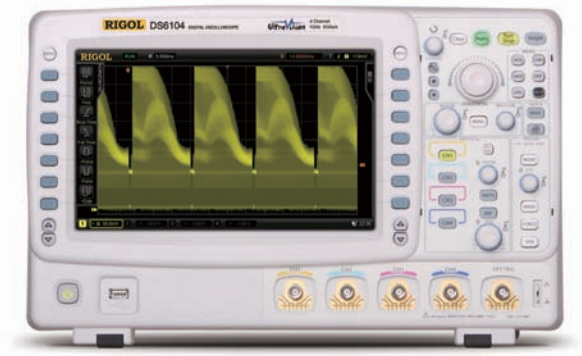
Company Profile

RIGOL TECHNOLOGIES, INC. is an emerging leader in the test and measurement field.
RIGOL is the fellow member of China Electronic Instrument Industry Association and the Informational Member of LXI Consortium. Our current product line consists of Digital Oscilloscopes, RF Spectrum Analyzers, Function/Arbitrary Waveform Generators, Digital Multimeters, Digital Programmable Power supplies, Virtual Instruments, Chemical Analysis Systems, and more.
RIGOL currently has more than 400 employees. We invest heavily in R&D and today have over 100 R&D engineers working on future products. RIGOL has 10 sales offices in China along with a branch office in United States and a branch office in Germany, we have offered our products and services in over 60 countries or regions with more than 150 distributors and representatives.
RIGOL Technologies, Inc. is an ISO9001:2008 Quality Management System and ISO14001:2004 Environmental Management System Certified company.
Our goal is to be the partner of choice in test and measurement solutions and services.

Company History

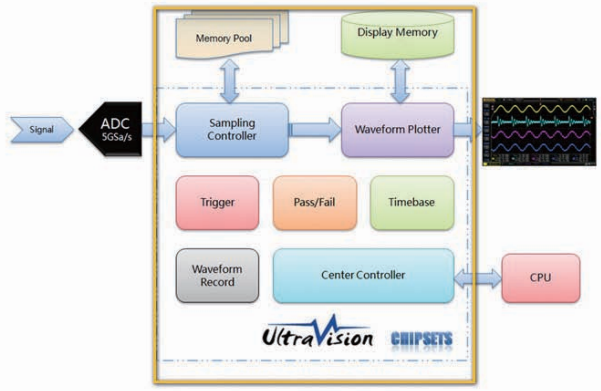
July, 1998	RIGOL was founded in Beijing.
May,1999	RIGOL's first product RVO2100, a high performance Virtual Digital Storage Oscilloscope was introduced.
March, 2002	DS3000 series , the RIGOL‘s first high performance Bench-Top DSO was introduced.
February, 2004	DS5000 series, the China's first 1GSa/s real-time sample rate, up to 200MHz bandwidth DSO was introduced.
April, 2006	RIGOL received ISO9001:2000 Certification.
April, 2006	RIGOL DS1000CD series oscilloscope was introduced, the best Performance/Price Mixed Signal Oscilloscope (MSO) in the world.
July, 2006	DG3000 and DG2000 series Function/Arbitrary Waveform Generator were introduced. The first Mixed Signal Generator (MSG) in the world with 1 anolog channel and optional 16 digital channels.
August, 2006	DM3000 series, RIGOL's 6½ digits Digital Multimeter was introduced.
October, 2006	DS1000 series won the Prestigious EDN China Annual Innovation Award, RIGOL also won the Local Innovation Company Award, it's the first time to a Chinese company.
April, 2007	RIGOL joined the editing of the China National Standard GB/T 15289-07 of 'General Specification and Test Method for Digital Storage Oscilloscopes.
April, 2007	RIGOL received ISO14001:2000 Environmental Management System Certification.
May, 2007	DS1000A seires, the China's first 2GSa/s real-time sampling rate, up to 300MHz bandwidth DSO was introduced.
May, 2007	DG1000 series Function/Arbitrary Waveform Generator with build-in counter was introduced.
October, 2007	RIGOL opened R&D center in Shanghai to strengthen its research and development capability.
November, 2007	As 2006 Annual Innovation Award winner, RIGOL won the EDN China Innovation Award once again.
April, 2008	DS1000B series Digital Oscilloscope, the China's first DSO with 4-channels and LXI standard compliance was introduced.
November, 2008	RIGOL was certified as Municipal Technology Center of Beijing.
January, 2009	RIGOL DS1000E series DSO was awarded “Product of the Year” by “Electronic Products” Magazine in United States.
January, 2009	RIGOL qualified the official LXI-C class Test House in Asia.
April, 2009	High-performance 80W, 3-output programmable linear DC power supply DP1308A was introduced.
August, 2009	DSA1000A series Spectrum Analyzer with the digital IF technology was introduced.
November, 2009	DS6000 series digital oscilloscope, the first DSO in China featuring 1GHz Bandwidth, 5GSa/s real time sample rate, 140Mpts Memory Depth and 180,000 wfm/s capture rate was introduced.
February, 2010	DP1116A with up to 160W, single-output Programmable linear DC Power Supply was introduced.
July, 2010	DG5000 series signal station, the world's first Arbitrary/Function Generator with I/Q modulation function in its class was introduced.
October, 2010	High precision 6½ digits DM3068 was introduced.
June, 2011	DS6104 Digital Oscilloscope won the 2011 R&D100 Awards in USA.
August, 2011	DG4000 Series Function/Arbitrary Waveform Generator was introduced.
September, 2011	DS4000 Series Digital Oscilloscope was introduced.
October, 2011	DSA800 Series Spectrum Analyzer was introduced.
February,2012	DS2000 Series Digital Oscilloscope was introduced, the world’ s first uV/div level vertical sensitivity oscilloscope.

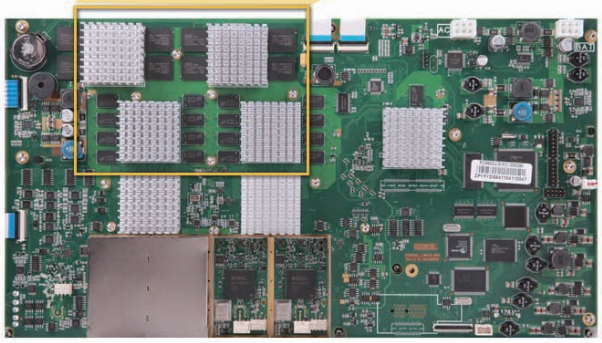
DS6000 Series Digital Oscilloscope



Features and Benefits

- Bandwidth 1GHz, 600 MHz
- Sample Rate Up to 5 GSa/s
- Channels 2 or 4
- Memory 140 Mpts(Std.)
- Waveform capture rate Up to 180,000 waveforms per second,
- Real Time Waveform Record, Replay & Analysis(Std. up to 200,000 frames)
- Innovative “UltraVision” technology
- A variety of Trigger functions and Automatic measurements with statistics
- Support serial bus trigger(Std.) and decoding(Opt.)
- Dedicated data search knob“ WaveFinder ”
- Complete Connectivity: USB, LAN(LXI-C), VGA, AUX, GPIB(Option)
- Built-in 1 GBytes Flash Memory
- 10.1 inch WVGA(800X480) Display





UltraVision

- Deeper Memory Depth(Std.140Mpts)
- Higher Waveform capture rate (Up to 180,000 wfms/s)
- Real Time waveform Record,Replay & Analysis (Up to 200,000 frames)
- Multi-level intensity grading display

Key Specifications

Model Number	DS6104	DS6102	DS6064	DS6062
Analog BW	1 GHz		600 MHz	
Channels	4	2	4	2
Max. Sample rate	5 GSa/s			
Max. Memory Depth	140 Mpts (Std.)			
Max. Waveform Capture rate	180,000 wfms/s			
Time Base Accuracy	≤ ±4 ppm			
Time Base Drift	≤ ±2 ppm/Year			
Timebase Scale	DS606X:1 ns/div to 50 s/div			
	DS610X:500 ps/div to 50 s/div			
Input Impedance	1MΩ,50 Ω			
Vertical Scale	2 mV/div to 5 V/div(1 MΩ)			
	2 mV/div to 1 V/div(50 Ω)			
DC Gain Accuracy	±2% full scale			
Bandwidth Limit	20 MHz or 250 MHz			
Real Time waveform Record,	Max. 200,000 frames(Std.)			
Replay and Analysis function				
Std, trigger functions	Edge,Pulse width,Slope,Video,HDTV,Pattern,			
	RS232/UART,I2C,SPI,CAN,USB,FlexRay			
Serial Bus decoding	RS232/UART,I2C,SPI,CAN,FlexRay			
Math functions	A+B,A-B,A×B,A/B,FFT,Advanced Math,Logic operation			
Auto Measurements	Vpp, Vamp, Vmax, Vmin, Vtop, Vbase, Vavg, Vrms, Overshoot, Preshoot, Freq, Period, Rise			
	Time, Fall Time, +Width, -Width, +Duty, -Duty, Delay A→B rising edge, Delay A→B falling			
	edge,Phase A→B rising edge,Phase A→B falling edge			
Connectivities	Dual USB HOST,USB DEVICE,LAN,VGA,10MHz Input/Output,			
	Aux Output(TrigOut, Quick Edge, PassFail, Calibration, GND)			
Display	10.1 inches (257 mm) TFT LCD display,800 Horizontal ×RGB×480 Vertical Pixel,			
	Multiple intensity grading			
Size (W×H×D)	399.0 mm× 255.3 mm×123.8 mm			
Weight	5.345 ± 0.2 kg			
Std. Probes	600MHz BW Passive Probe:4 sets for 4 channel models,2 sets for 2 channel models			
	1.5GHz BW Passive Probe:2 sets for DS6104,1 set for DS6102			

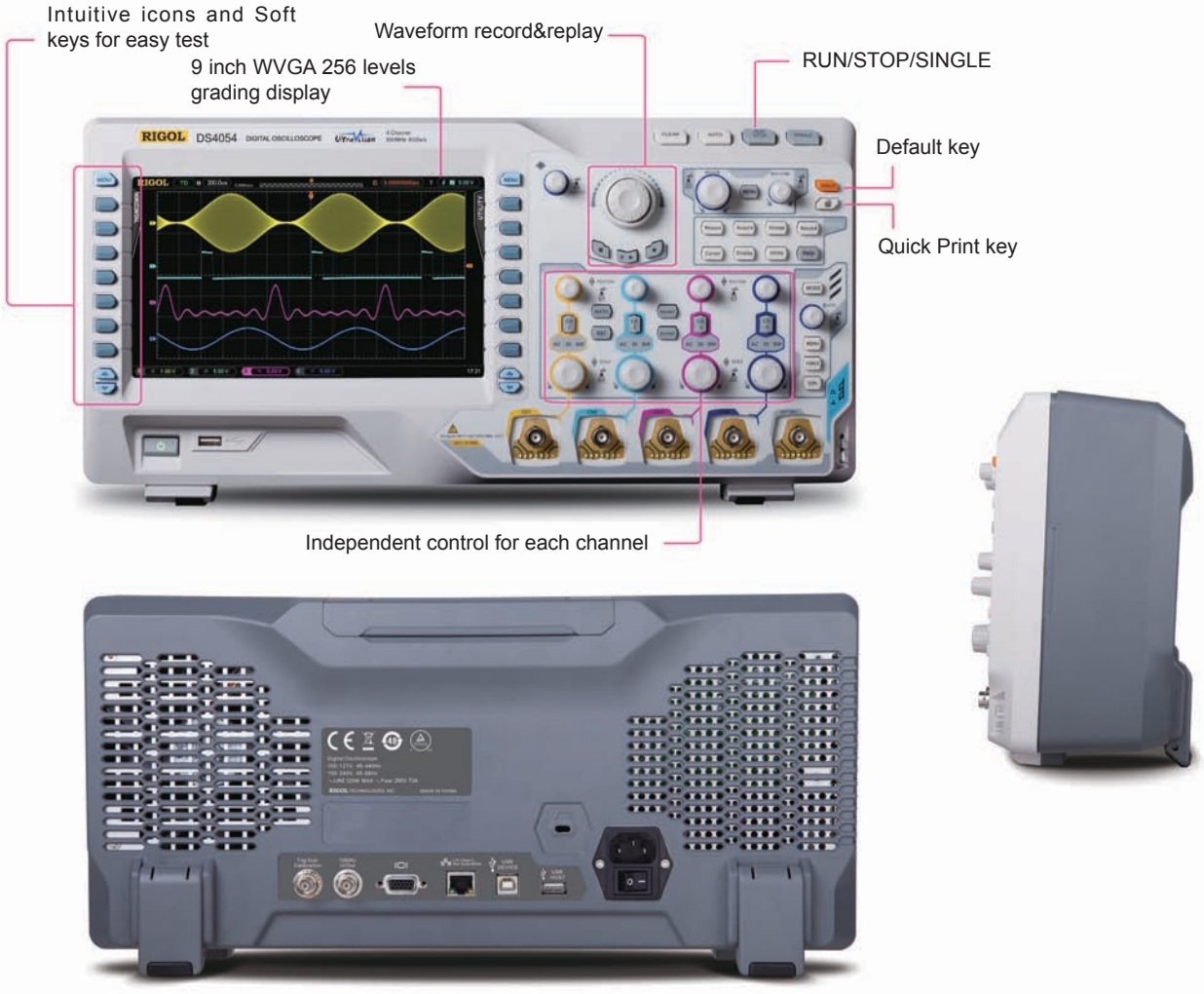
Ordering Information

	Description	Order Number
Model	DS6104 (1 GHz, 4-channel)	DS6104
	DS6102 (1 GHz, dual-channel)	DS6102
	DS6064 (600 MHz, 4-channel)	DS6064
	DS6062 (600 MHz, dual-channel)	DS6062
Standard Accessories	Power Cord conforming to the standard of the country	-
	Front Panel Cover	FPC-DS-6
	USB Data Cable	CB-USB-150
	600MHz BW Passive Probe,4 sets for 4 channel models,2 sets for 2 channel models	RP5600A
	1.5GHz BW Passive Probe,2 sets for DS6104,1 set for DS6102	RP6150
	Quick Guide	-
	Resource CD (User's Guide and Application Software)	-
Optional Accessories	1.5GHz Active Differential Probe	RP7150
	500MHz BW Passive Probes(Support all models)	RP3500
	600MHz BW Passive Probe(Support all models)	RP5600A
	1.5GHz BW Passive Probe(Support all models)	RP6150
	11.1 V, 147 Wh Lithium Battery Set	BAT
	USB to GPIB Module	USB-GPIB
	Desk Mount Instrument Arm	ARM
	Rack Mount Kit	RM-DS-6
Decoding Options	RS232/UART Decoding kit	SD-RS232-DS6
	I2C Decoding kit	SD-I2C-DS6
	SPI Decoding kit	SD-SPI-DS6 (For DS6XX4)
	CAN Decoding kit	SD-CAN-DS6
	FlexRay Decoding Kit	SD-FlexRay-DS6

DS4000 Series Digital Oscilloscope

Features and Benefits

- Bandwidth 500MHz, 350MHz,200MHz,100MHz
- Sample Rate Up to 4GSa/s
- Channels 2 or 4
- Memory 140 Mpts(Std.)
- Waveform capture rate Up to 110,000 waveforms per second,
- Real Time Waveform Record, Replay & Analysis(Std. up to 200,000 frames)
- Lower noise floor, the Min. vertical sensitivity is 1mV/div
- Innovative “UltraVision” technology
- A variety of Trigger functions and Automatic measurements with statistics
- Support serial bus trigger(Std.) and decoding(Opt.)
- Complete Connectivity: USB, LAN(LXI-C), VGA, AUX
- 9 inch WVGA(800X480) Display with 256 level intensity grading display


Intuitive icons and Soft keys for easy test
Waveform record&replay
9 inch WVGA 256 levels grading display
RUN/STOP/SINGLE
Default key
Quick Print key
Independent control for each channel

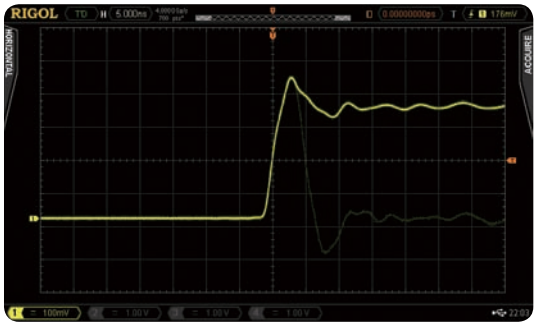
Product Dimensions: Width X Height X Depth = 440.0mm X 218.0 mm X 130.0 mm Weight：4.8 kg ± 0.2 kg (Without Package)

Innovative UltraVision technology

- Deeper Memory Depth(Std.140Mpts)
- Higher Waveform capture rate (Up to 110,000 wfms/s)
- Real Time waveform Record,Replay & Analysis (Up to 200,000 frames)
- Multi-level intensity grading display(256 Levels)

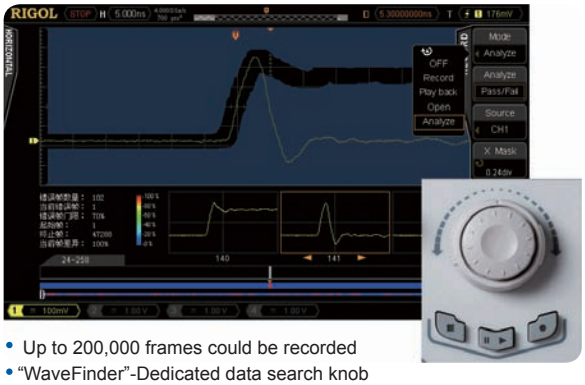
Features and Benefits

UltraVision: Up to 110K wfms/s Waveform capture rate



Find the infrequent problem easily

UltraVision: Realtime waveform record,replay,analysis function (std.)

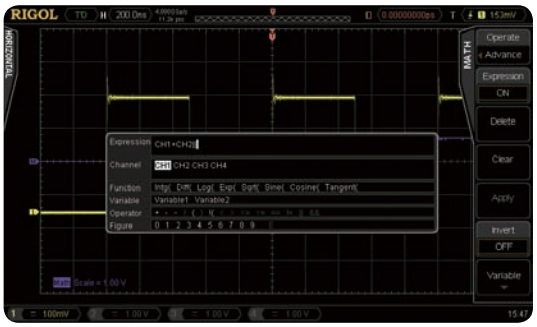


- Up to 200,000 frames could be recorded
- "WaveFinder"-Dedicated data search knob
- Replay and analyze the recorded waveforms

UltraVision: Deeper Memory with up to 256-Level intensity grading display

Provide the capability to see both the panorama and detail simultaneously

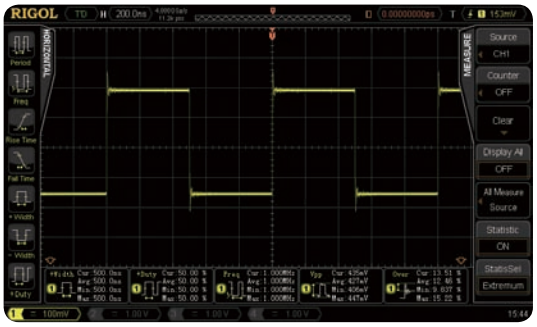
Advanced math function (user defined)



Mask test functions(Std.)

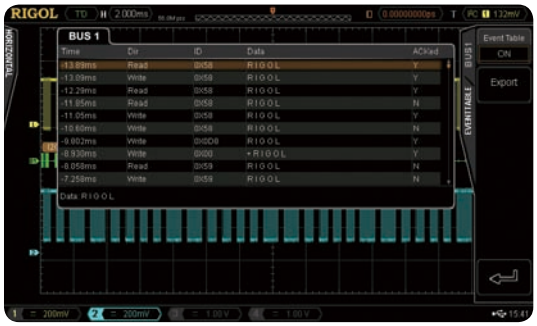
User defined Mask,Pass/Fail counts,Stop on Fail,Fail Alarm

Automatic measurements with statistics

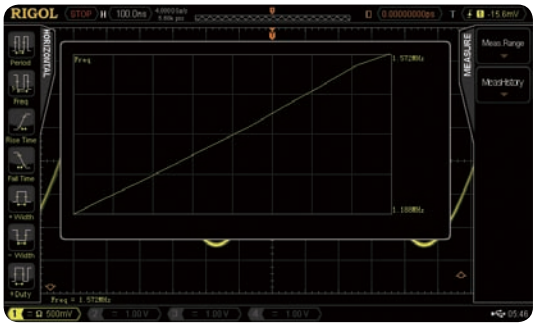


- Automatic measurements for Horizontal and vertical parameters
- Display up to 5 measurement items with statistics simultaneously
- Display all measurement items with the current value in the screen
- Intuitive icon and soft key operation for simplified testing

Serial bus decoding functions



Measurement History: Show the trend of the parameters



▶ Models and key Specs

Model Number	DS4054	DS4052	DS4034	DS4032	DS4024	DS4022	DS4014	DS4012
Analog BW	500 MHz		350 MHz		200 MHz		100 MHz	
Channels	4	2	4	2	4	2	4	2
Max. Sample rate	4 GSa/s							
Max. Memory Depth	140 Mpts							
Max. Waveform Capture rate	110,000 wfms/s							
Time Base Accuracy	≤ ±4 ppm							
Time Base Drift	≤ ±2 ppm/Year							
Time Base Scale	DS405x: 1 ns/div to 50 s/div							
	DS403x/DS402x: 2 ns/div to 50 s/div							
	DS401x: 5 ns/div to 50 s/div							
Input Impedance	1MΩ,50 Ω							
Vertical Scale	1 mV/div to 5 V/div(1 MΩ)							
	1 mV/div to 1 V/div(50 Ω)							
DC Gain Accuracy	±2% full scale							
Bandwidth Limit	DS405x/ DS403x: 20 MHz/100MHz/200MHz							
	DS402x: 20 MHz/100MHz							
	DS401x: 20 MHz							
Real Time waveform Record,	Max. 200,000 frames(Std.)							
Replay and Analysis function								
Std, trigger functions	Edge,Nth Edge,Runt,Pulse width,Slope,Video,Pattern,							
	RS232/UART,I2C,SPI,CAN,USB,FlexRay							
Serial Bus decoding	RS232/UART,I2C,SPI,CAN,FlexRay							
Math functions	A+B,A−B,A×B,A/B,FFT,Advanced Math,Logic operation							
Auto Measurements	Vpp, Vamp, Vmax, Vmin, Vtop, Vbase, Vavg, Vrms, Overshoot, Preshoot, Freq, Period, Rise Time,							
	Fall Time, +Width, −Width, +Duty, −Duty, Delay A→B rising edge, Delay A→B falling edge,Phase							
	A→B rising edge,Phase A→B falling edge							
Connectivities	Dual USB HOST，USB DEVICE，LAN，VGA，10MHz Input/Output,							
	Aux Output(TrigOut, Quick Edge, PassFail, Calibration, GND)							
Display	9 inches (229 mm) TFT LCD display,800 Horizontal ×RGB×480 Vertical Pixel,							
	256 intensity grading level							
Size（W×H×D）	440.0 mm× 218.0 mm×130.0 mm							
Weight	4.8 kg ± 0.2 kg							
Std. Probes	RP3500 500MHz BW Passive Probe:2 or 4 sets							

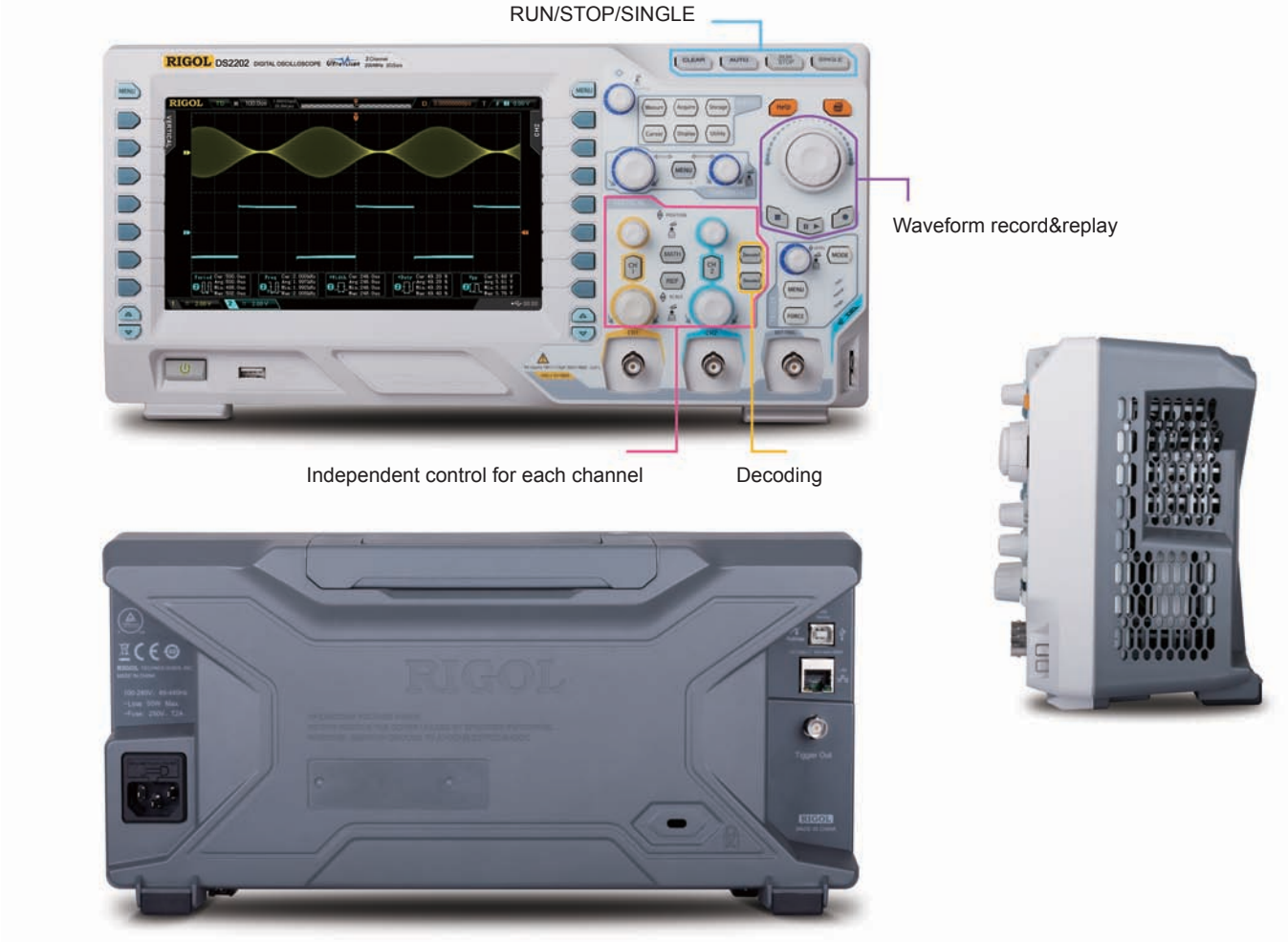
▶ Ordering Information

	Description	Order Number
Model	DS4012 (100MHz, 2-channel)	DS4012
	DS4014 (100MHz, 4-channel)	DS4014
	DS4022 (200MHz, 2-channel)	DS4022
	DS4024 (200MHz, 4-channel)	DS4024
	DS4032 (350MHz, 2-channel)	DS4032
	DS4034 (350MHz, 4-channel)	DS4034
	DS4052 (500MHz, 2-channel)	DS4052
	DS4054 (500MHz, 4-channel)	DS4054
Standard Accessories	Power Cord conforming to the standard of the country	-
	Front Panel Cover	FPC-DS-4
	USB Data Cable	CB-USB-150
	2 or 4 Passive Probes (500 MHz)	RP3500
	Quick Guide	-
	Resource CD (User's Guide and Application Software)	-
Optional Accessories	Active Differential Probe (1.5 GHz)	RP7150
	Rack Mount Kit	RM-DS-4
Decoding Options	RS232/UART Decoding Kit	SD-RS232-DS4
	I2C Decoding Kit	SD-I2C-DS4
	SPI Decoding Kit	SD-SPI-DS4 (Only for DS4XX4)
	CAN Decoding Kit	SD-CAN-DS4
	FlexRay Decoding Kit	SD-FlexRay-DS4

DS2000 Series Digital Oscilloscope

Features and Benefits

- Wider vertical range(500uV/div ~ 10V/div), lower noise floor, Better for small signal capturing
- Full bandwidth, lower overshoot(<5%),perfect frequency response design
- Bandwidth 70MHz,100MHz,200MHz
- Max. Sample Rate 2G Sa/s
- Standard Memory Depth up to 14Mpts,Optional Memory Depth up to 56Mpts
- Innovative "UltraVision" technology
- Waveform capture rate up to 50,000 wfs/s
- 256 Levels intensity grading waveform display
- Up to 65,000 frames Hardware based real time waveform record and analysis function(Standard)
- A variety of trigger and serial bus decording functions(RS232,I2C,SPI)
- Complete connectivities: USB Host,USB Device,LAN(LXI),AUX
- Compact size, light weight, easy to use
- 8 inch TFT (800x480) WVGA



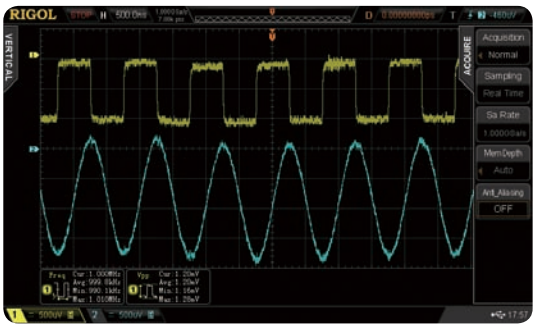
Product Dimensions: Width X Height X Depth=361.6 mm×179.6 mm×130.8 mm Weight: 3.9 kg ± 0.2 kg(Without Package)

Innovative UltraVision technology

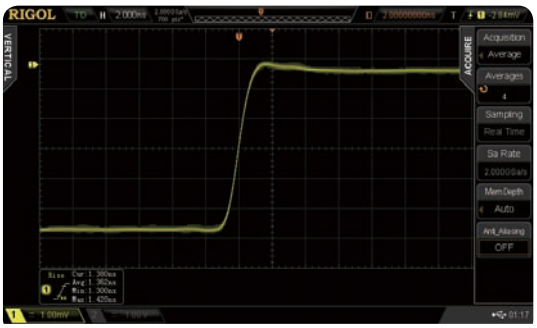
- Deeper Memory Depth(Std.14Mpts,Opt.56Mpts)
- Higher Waveform capture rate (Up to 50,000 wfms/s)
- Real Time waveform Record,Replay & Analysis (Up to 65,000 frames)
- Multi-level intensity grading display(Up to 256 Levels)

➤ Features and Benefits

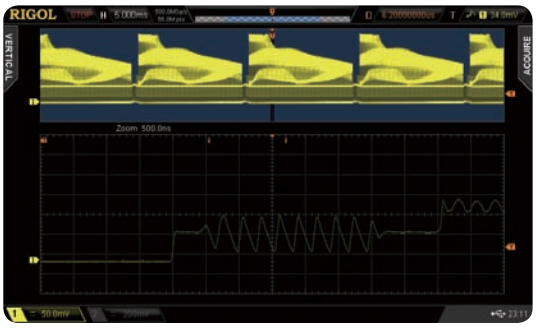
Wider Vertical range(500uV/div~10V/div),Lower noise floor, Better for small signal capturing



Full bandwidth,Lower Overshoot(<5%),Perfect frequency response design



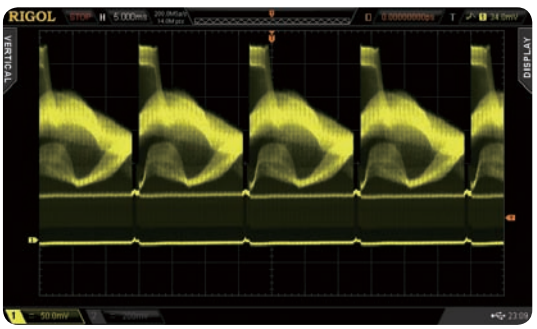
UltraVision: Deeper memory(Std.14Mpts,Opt.56Mpts)



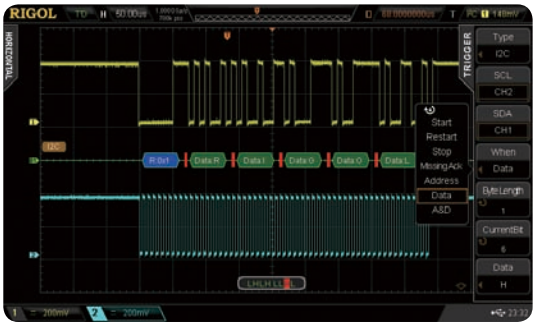
UltraVision: Up to 50,000 wfms/s Waveform capture rate

UltraVision:Realtime waveform record,replay,analysis function (std.)

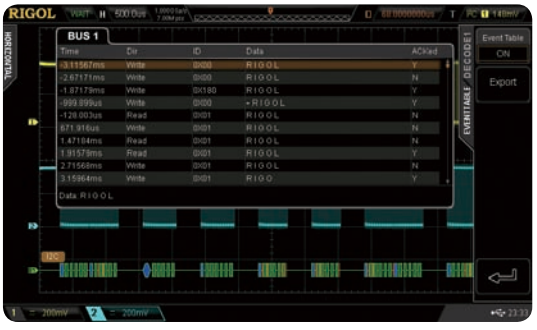
UltraVision: Deeper Memory with Multi-Level intensity grading display(Up to 256 levels)



Std. serial bus trigger functions(RS232,I2C,SPI)

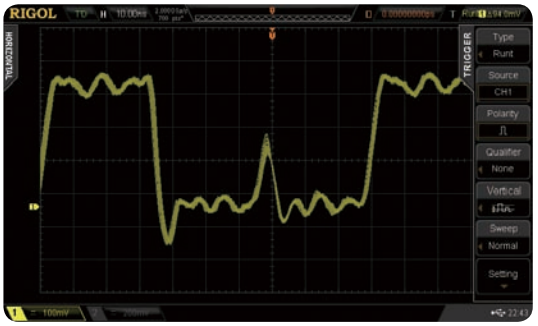


Optional Serial bus decoding function with listing display

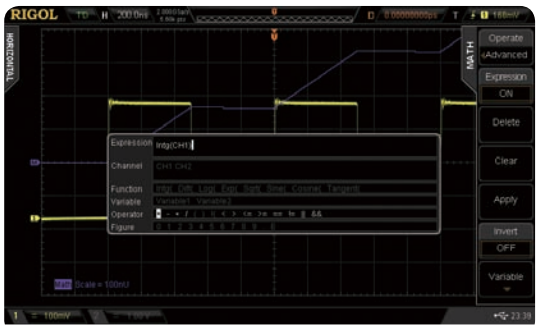


Versatile Trigger Functions(Runt, Nth Edge,Setup/ Hold …)

Runt Trigger

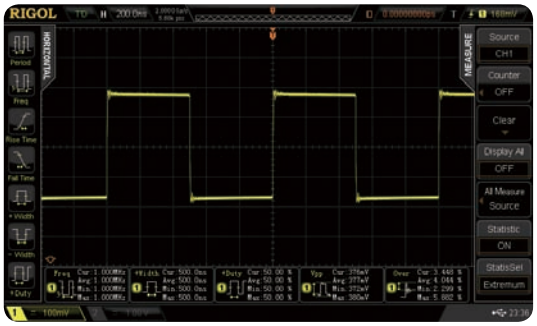


Std. Advanced Math Function



Std. Mask Test Function

Automatic measurements with statistics



Complete Connectivity(USB Host,USB Device,LAN,AUX)

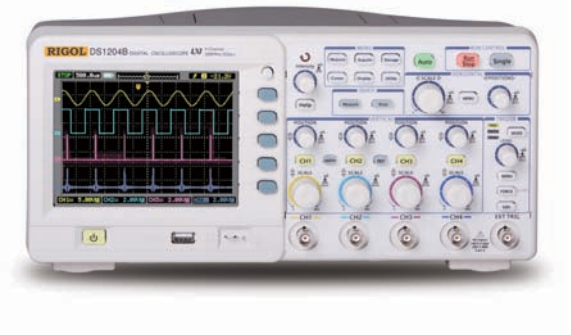
▶ Models and key Specs

Model Number	DS2072	DS2102	DS2202
Analog BW	70 MHz	100MHz	200 MHz
Channels	2		
Max. Sample rate	2GSa/s ((single–channel), 1GSa/s（(dual–channel）		
Max. Memory Depth	14Mpts（std.）, 56Mpts（option）		
Max. Waveform Capture rate	50,000 wfms/s		
Time Base Accuracy	≤ ±25 ppm		
Time Base Drift	≤ ±5 ppm/Year		
Time Base Scale	DS2202：2 ns/div to 1000 s/div		
	DS2102/DS2072：5 ns/div to 1000 s/div		
Input Impedance	（1 MΩ ± 1%）||（16 pF ± 3 pF）		
Vertical Scale	500 uV/div to 10 V/div		
DC Gain Accuracy	±2% full scale		
Bandwidth Limit	DS2202: 20 MHz/100MHz		
	DS2102/DS2072：20 MHz		
Real Time waveform Record,	Max. 65,000 frames(Std.)		
Replay and Analysis function			
Std. trigger functions	Edge,Pulse width,Slope,Video,Pattern,Runt,SetupHold,RS232,I2C,SPI		
Optional trigger functions	Windows,Nth Edge,HDTV,Delay,Time Out,Duration,USB		
Std. Bus decording	Parallel Bus		
Optional Serial Bus decoding	RS232,I2C,SPI		
Math functions	A+B,A–B,A × B,A/B,FFT,Advanced Math,Logic operation		
Auto Measurement	Peak Value, Top Value, Bottom Value, Amplitude, Average, Mean Square Root, Overshoot, Pre–shoot,		
	Area, Period Area, Frequency, Period, Rise Time, Fall Time, Positive Pulse Width, Negative Pulse Width,		
	Positive Duty Cycle, Negative Duty Cycle, Delay A→B↓, Delay A→B↑, Phase A→B↓, Phase A→B↑		
Connectivities	USB HOST(support USB–GPIB),USB DEVICE，LAN(LXI),Aux Output(TrigOut, PassFail)		
Display	8 inches (203 mm) TFT LCD display,800 Horizontal × RGB × 480 Vertical Pixel,		
	256 intensity grading level		
Size（W × H × D）	361.6 mm × 179.6 mm × 130.8 mm		
Weight	3.9 kg ± 0.2 kg（Without Package）		
Std. Probes	RP3300 350MHz BW Passive Probe:2 sets		

▶ Ordering Information

	Description	Order Number
Model	DS2072(70MHz,2-channel)	DS2072
	DS2102(100MHz,2-channel)	DS2102
	DS2202(200MHz,2-channel)	DS2202
Standard Accessories	Power Cord conforming to the standard of the country	-
	USB Data Cable	CB-USB-150
	2 Passive Probes (350 MHz)	RP3300
	Quick Guide	-
	Resource CD (User's Guide and Application Software)	-
Optional Accessories	Rack Mount Kit	RM-DS-2
Deep Memory Option	56Mpts(single channel)	MEM-DS2
	/28Mpts(dual channel)	
Advanced trigger functions	Windows, Nth Edge,HDTV,Delay, Time Out, Duration, USB	AT-DS2
Decoding Options	RS232,I2C,SPI Decoding Kit	SD-DS2

DS1000B Series Digital Oscilloscope



Features and Benefits

- 200MHz,100MHz,70MHz Bandwidth, 4 channels
- 2 GSa/s Real-time Sample Rate
- Versatile Trigger Functions: Edge, Video, Pulse, Pattern and Alternate
- 5.7" TFT QVGA (320×240) with 64K color LED backlight High Definition Display
- Support PictBridge printers
- Connectivity: USB Host & Device, LAN (LXI-C),GPIB (optional)
- Compact size, light weight

Specifications

Model	DS1204B	DS1104B	DS1074B
Bandwidth	200 MHz	100 MHz	70 MHz
Memory Depth	Up to16 kpts (half channel), 8 kpts (each channel)		
Channels	4 channels + external trigger		
Real-time Sample Rate	2 GSa/s (half channel), 1 GSa/s (each channel)		
Equivalent-time Sample Rate	50 GSa/s	25 GSa/s	10 GSa/s
Rise Time	<1.75ns	<3.5ns	<5ns
Input Impedance	1 MΩ || 18 pF		
Timebase Range	1 ns/div ~ 50 s/div	2 ns/div ~ 50 s/div	5 ns/div ~ 50 s/div
Trigger modes	Edge, Video, Pulse Width, Alternate, pattern trigger across 4 analog channels		
Vertical Sensitivity	2 mV/div ~ 10 V/div		
Vertical Resolution	8 bits		
Maximum Input voltage	All Inputs 1MΩ||18pF 300Vrms Max CAT I		

DS1000CA Series Digital Oscilloscope

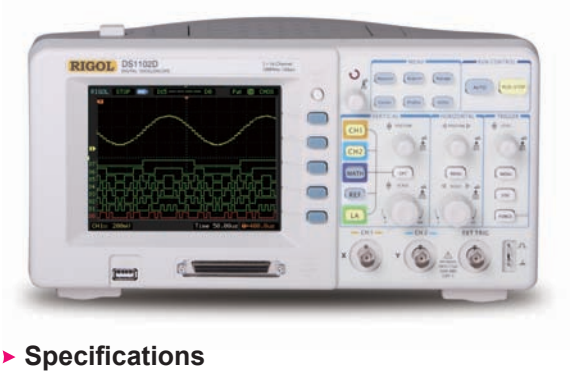
Features and Benefits

- 300MHz,200MHz,100MHz,70MHz Bandwidth, 2 channels
- 2 GSa/s Real-time Sample Rate
- Versatile Trigger Functions: Edge, Video, Pulse, Slope and Alternate
- Up to 2000 wfms/s Waveform Update Rate
- Vertical Range: 1mV/div~10V/div
- Connectivity: USB Host & Device,RS232,P/F Out
- Compact size, light weight

Specifications

Model	DS1302CA	DS1202CA	DS1102CA	DS1072CA
Bandwidth	300 MHz	200 MHz	100 MHz	70 MHz
Memory Depth	Up to 10 kpts (5 kpts on 2 channels)			
Channels	2 channels + external trigger			
Real-time Sample Rate	2 GSa/s (1 GSa/s on 2 channels)			
Equivalent-time Sample Rate	50 GSa/s	25 GSa/s		10 GSa/s
Rise Time	1.2 ns	1.8 ns	3.5 ns	5.8 ns
Input Impedance	1 MΩ || 15 pF, 50 Ω		1 MΩ || 15 pF	
Timebase Range	1 ns/div ~ 50 s/div	2 ns/div ~ 50 s/div		5 ns/div ~ 50 s/div
Trigger Modes	Edge, Video, Pulse Width, Slope, Alternate			
Vertical Sensitivity	1 mV/div ~ 10 V/div			
Vertical Resolution	8 bits			
Maximum Input voltage	All Inputs 1MΩ||15pF 300V CAT I or 50Ω 5Vrms Max			

DS1000E • DS1000D Series Digital Oscilloscope



Features and Benefits

- 2 Analog +16 Logic Channels Mixed Signal Oscilloscope (DS1000D)
- Maximum 1GSa/s (Analog), 200MSa/s (LA) Real-time Sample Rate and up to 1 Mpts Memory Depth
- Bandwidth: 50MHz and 100MHz
- Versatile Trigger Functions: Edge, Video, Pulse, Slope, Alternate, Pattern (DS1000D) and Duration (DS1000D)
- Connectivity: USB Host & Device, RS-232, P/F Out
- Compact size, light weight

Specifications

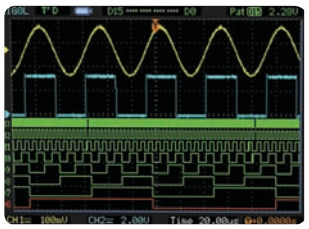
Model	DS1102E	DS1052E
	DS1102D	DS1052D
Bandwidth	100MHz	50MHz
Channels	2 Channels + External Trigger	
Real-time Sample Rate	1 GSa/s (Single Channel), 500 MSa/s (Dual Channels)	
Equivalent-time Sample Rate	25 GSa/s	10 GSa/s
Rise Time	3.5 ns	7 ns

Memory Depth	Mode	Max. Sample Rate	Normal Mode	Long Memory Mode
	One Channel	1 GSa/s	16 kpts	N/A
		500 MSa/s or less	16 kpts	1 Mpts
	Dual Channels	500 MSa/s or less	8 kpts	N.A.
		250 MSa/s or less	8 kpts	512 kpts
Timebase Range	2 ns/div ~ 50 s/div		5 ns/div ~ 50 s/div	
Trigger Modes	Edge, Video, Pulse Width, Slope, Alternate			
Vertical Resolution	8 bits			
Vertical Sensitivity	2 mV/div ~ 10 V/div			
Maximum Input Voltage	All inputs 1 MΩ II 15 pF 300 V RMS CAT I			

MSO Logic Analyzer	DS1102D	DS1052D
Channels	16 logic Channels	
Sample Rate	200 MSa/s (each channel)	
Record Length	512 kpts (each channel)	
Trigger Modes	Pattern, Duration	
Threshold Selections	TTL=1.4 V, CMOS=2.5 V, ECL=-1.3 V, USER=-8 V to + 8 V	

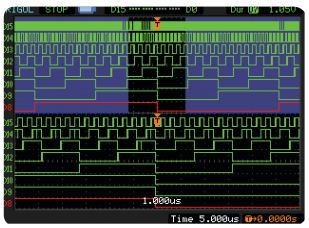
DS1000D Mixed Signal Oscilloscope(2+16 channels)

Logic Analyzer Module



Pattern Trigger

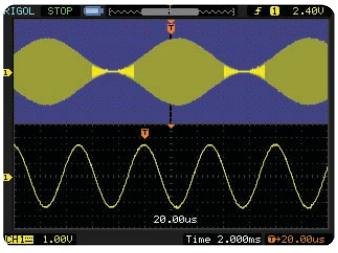
The trigger condition is a combination of the level of the signal and the edge



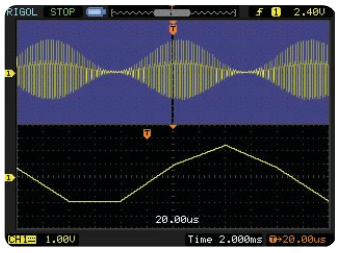
Duration Trigger

A combination of Pattern Trigger and Pulse Width Trigger capabilities make isolation of events easy

Deep Memory



1Mpts Memory



2Kpts Memory

See both the envelop and the detail of the waveform

RIGOL Digital Scope Probes & Accessories

▸ RIGOL Digital Scope Probes Selection guide

Model Number	Attenuation Ratio	Bandwidth	Input R	Max.Input voltage	Recommended applications
RP2200	1:1 or 10:1	1X: DC~7 MHz	1X: 1MΩ ±2%	1X: CAT II 150 V AC	Small signal test (1X)
		10X:DC~150 MHz	10X: 10 MΩ±2%	10X: CAT II 300V AC	General purpose test
RP3300	1:1 or 10:1	1X: DC~8 MHz	1X: 1 MΩ ±2%	1X: CAT II 150 V AC	Small signal test (1X)
		10X:DC~350 MHz	10X: 10 MΩ±2%	10X: CAT II 300V AC	General purpose test
RP3500	10:1	DC~500 MHz	10 MΩ±2%	CAT II 300VAC	General purpose test
RP5600A	10:1	DC~600 MHz	10 MΩ±2%	CAT II 300VAC	General purpose test
RP6150	10:1	DC~1.5 GHz	500 Ω±10 Ω	CAT I 10VAC	High frequency single ended small signal test
RP1300H	100:1	DC~300 MHz	100 MΩ	CAT I 2000V (DC+AC), CAT II 1500 V (DC+AC)	High voltage test
RP1050H	1000:1	DC~50 MHz	10 MΩ±0.5%	DC: 0~15KV DC	High voltage test
				AC: pulse <=30 KVp-p	
				AC: sine wave <=10 KVrms	
RP7150	10:1	DC~1.5 GHz	Differential mode: 50 kΩ±2%	30V Peak, CAT I	Differential /Single ended high frequency signal test
			Single ended mode: 24kΩ±2%		

RP2200 150MHz Passive Probe

RP3300 350MHz Passive Probe

RP3500 500MHz Passive Probe

RP5600A 600MHz Passive Probe

RP6150 1.5GHz Passive Probe

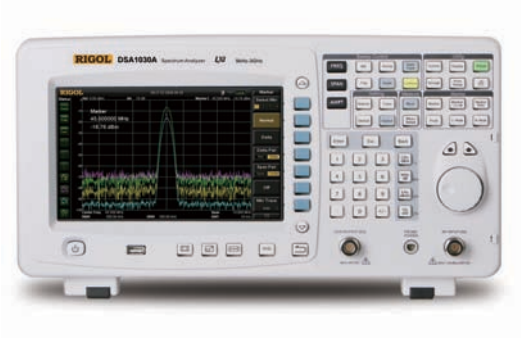
RP1300H 300MHz High Voltage Probe

RP1050H 50MHz High Voltage Probe

RP7150 1.5GHz Active Probe

RT50J 50ohm Impedance adapter (2W,1GHz)

DSA1000A series Spectrum Analyzer



Features and Benefits

- All-Digital IF Technology
- 9 kHz - 3 GHz Frequency Range
- -148dBm Displayed Average Noise Level (DANL)
- -88dBc/Hz @ 10kHz Offset Phase Noise
- < 1.0dB Total Amplitude Accuracy
- 10Hz Minimum Resolution Bandwidth (RBW)
- 3GHz Tracking Generator (DSA1030A-TG)
- Standard Advanced Measurement functions
- Complete Connectivity: LAN,USB host,USB device,VGA ,GPIB (option)
- Battery (option)
- 8.5 Inch WVGA (800x480) Display
- Compact Size,Light weight design

Key Specifications

Frequency

Frequency		
Frequency Range	DSA1030A	9 kHz to 3 GHz
Frequency Resolution		1 Hz

Internal Frequency Reference		
Reference Frequency		10 MHz
Aging Rate		<3 ppm/year
Temperature Drift	20℃ to 30℃	<3 ppm

SSB phase noise		
Carrier Offset	10 kHz	<-88 dBc/Hz, typical
	100 kHz	<-100 dBc/Hz, typical
	1 MHz	<-110 dBc/Hz, typical

Note: typical fc = 500 MHz, RBW≤1 kHz, sample detector, and trace average≥50.

Bandwidths		
Resolution Bandwidth (-3 dB)		10 Hz to 1 MHz, in 1-3-10 sequence
RBW Uncertainty		< 5%, nominal
Resolution Filter Shape Factor (60 dB: 3 dB)		< 5, nominal
Video Bandwidth (-3 dB)		1 Hz to 3 MHz, in 1-3-10 sequence

Amplitude

Measurement Range		
Range	10 MHz to 3 GHz	DANL to +30 dBm
Maximum rated input level		
DC Voltage		50 V
CW RF Power	RF attenuation ≥ 20 dB	30 dBm (1W)
Max. Damage Level		40 dBm (10W)

Note: when input level >33 dBm, the protection switch will be on.

Displayed Average Noise Level (DANL)		
0 dB RF Attenuation, RBW=VBW=10Hz, Sample Detector, Trace Average ≥ 50		
DANL (Preamplifier Off)	100 kHz to 10 MHz	<-85 dBm-3 × (f/1 MHz)dB, typ. -125 dBm
	10 MHz to 2.5 GHz	<-127 dBm+3 × (f/1 GHz)dB, typ. -130 dBm
	2.5 GHz to 3 GHz	<-115 dBm
DANL (Preamplifier On)	100 kHz to 1 MHz	<-103 dBm
	1 MHz to 10 MHz	<-103 dBm-3 × (f/1 MHz)dB, typ. -143 dBm
	10 MHz to 2.5 GHz	<-145 dBm+3 × (f/1 GHz)dB, typ. -148 dBm
	2.5 GHz to 3 GHz	<-133 dBm

Level Measurement Uncertainty		
Level Measurement Uncertainty	95% confidence level, S/N>20 dB, RBW=VBW=1 kHz, preamplifier off, 10 dB RF attenuation, -50 dBm<reference level<0, 10 MHz<fc<3 GHz, 20 ºC to 30 ºC	<1.0 dB, nominal

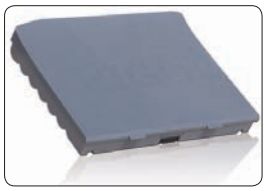
Tracking Generator (for DSA1030A-TG)

TG Output		
Frequency Range		9 kHz to 3 GHz
Output Level		-20 dBm to 0 dBm, in 1 dB steps
Output Flatness	10 MHz to 3 GHz, referenced to 50 MHz	±3 dB

▸ Options and Accessories

Tracking Generator (DSA1030A-TG)

Rack Mount Kit (DSA1000-RMSA)

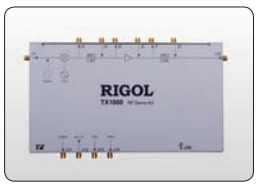


Lithium Battery Set (BAT)

Soft CarringBag (DSA1000-SCBA)

USB to GPIB Converter(USB-GPIB)

Desk Mount Instrument Arm(ARM)



RF Demo Kit (TX1000)

DSA Accessories (DSA Utility Kit)

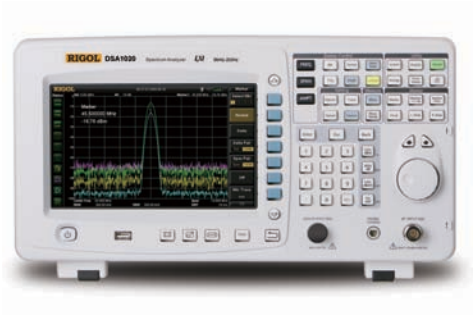
DSA PC Software (Ultra Spectrum)

VSWR Bridge (VB1020/VB1030)

▸ Ordering Information

	Description	Order Number
Model	Spectrum Analyzer, 9 kHz to 3 GHz, with preamplifier	DSA1030A
	Spectrum Analyzer, 9 kHz to 3 GHz, with Preamplifier & Tracking Generator (Factory Installed)	DSA1030A-TG
Standard Accessories	Front Panel Cover	
	Quick Guide (Hard Copy)	
	CDROM (User Guide, Programming Guide)	
	USB Cable	
	Power Cable	
Options	VSWR Bridge(3GHz)	VB1030
	USB to GPIB Interface Converter for Instrument	USB-GPIB
	DSA PC Software	Ultra Spectrum
	11.1 V, 147 Wh Lithium Battery Set	BAT
	RF Demo Kit (Transmitter)	TX1000
Optional Accessories	Rack Mount Kit	DSA1000-RMSA
	Front Panel Cover	DSA1000-FPCS
	Soft Carrying Bag	DSA1000-SCBA
	Desk Mount Instrument Arm	ARM
	DSA Accessories Package	DSA Utility Kit
Orderable Manuals (Hard Copy)	Quick Guide, Chinese	QGD010
	Quick Guide, English	QGD011
	User Guide, Chinese	UGD010
	User Guide, English	UGD011
	Programming Guide, Chinese	PGD010
	Programming Guide, English	PGD011

DSA1000 Series Economic Spectrum Analyzer



Features and Benefits

- All-Digital IF Technology
- 9 kHz - 2 or 3 GHz Frequency Range
- Up to -138dBm Displayed Average Noise Level (DANL)
- -80dBc/Hz @ 10kHz Offset Phase Noise
- < 1.5dB Total Amplitude Accuracy
- 100Hz Minimum Resolution Bandwidth (RBW)
- 3GHz Tracking Generator (DSA1030A-TG)
- Optional Advanced Measurement functions
- Complete Connectivity: LAN,USB host,USB device,VGA ,GPIB (option)
- Battery (option)
- 8.5 Inch WVGA (800x480) Display
- Compact Size,Light weight design

Key Specifications

Frequency

Frequency		
Frequency Range	DSA1020	9 kHz to 2 GHz
	DSA1030	9 kHz to 3 GHz
Frequency Resolution		1 Hz

Internal Frequency Reference		
Reference Frequency		10 MHz
Aging Rate		<3 ppm/year
Temperature Drift	20℃ to 30℃	<3 ppm
SSB phase noise		
Carrier Offset	10 kHz	<-80 dBc/Hz

Note: typical fc = 500 MHz, RBW≤1 kHz, sample detector, and trace average≥50.

Bandwidths		
Resolution Bandwidth (-3 dB)		100 Hz to 1 MHz, in 1-3-10 sequence
RBW Uncertainty		< 5%, nominal
Resolution Filter Shape Factor (60 dB: 3 dB)		< 5, nominal
Video Bandwidth (-3 dB)		1 Hz to 3 MHz, in 1-3-10 sequence

Amplitude

Measurement Range		
Range	10 MHz to 3 GHz	DANL to +30 dBm
Maximum rated input level		
DC Voltage		50 V
CW RF Power	RF attenuation ≥ 20 dB	30 dBm (1W)
Max. Damage Level		40 dBm (10W)

Note: when input level >33 dBm, the protection switch will be on.

Displayed Average Noise Level (DSA1030)		
0 dB RF Attenuation, RBW=100Hz, VBW=10Hz, Sample Detector, Trace Average ≥ 50		
DANL (Preamplifier Off)	100 kHz to 10 MHz	<-75 dBm-3 × (f/1 MHz) dB, typ. -115 dBm
	10 MHz to 2.5 GHz	<-117 dBm+3 × (f/1 GHz) dB, typ. -120 dBm
	2.5 GHz to 3 GHz	<-105 dBm
DANL (Preamplifier On)	100 kHz to 1 MHz	<-93 dBm
	1 MHz to 10 MHz	<-93 dBm-3 × (f/1 MHz) dB, typ. -133 dBm
	10 MHz to 2.5 GHz	<-135 dBm+3 × (f/1 GHz) dB, typ. -138 dBm
	2.5 GHz to 3 GHz	<-123 dBm

Level Measurement Uncertainty		
Overall Amplitude Measurement Uncertainty	95% confidence level, S/N>20 dB, RBW=VBW=1kHz, preamplifier off, 10 dB RF attenuation, -50 dBm<Reference level<0, 10 MHz<fc<2GHz (DSA1020) , 10 MHz<fc<3GHz (DSA1030), 20 ºC to 30 ºC	<1.5 dB, nominal

Tracking Generator (for DSA1030-TG)

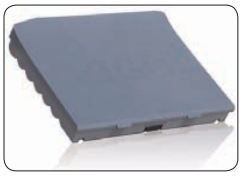
TG Output		
Frequency Range		9 kHz to 3 GHz
Output Level		-20 dBm to 0 dBm, in 1 dB steps
Output Flatness	10 MHz to 3 GHz, referenced to 50 MHz	±3 dB

▸ Options and Accessories

Tracking Generator (DSA1030-TG)

Advanced Measurement Kit (DSA1000-AMK)

Rack Mount Kit (DSA1000-RMSA)



Lithium Battery Set(BAT)

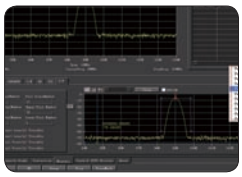
Soft Carring Bag(DSA1000-SCBA)

USB to GPIB Converter (USB-GPIB)

Desk Mount Instrument Arm (ARM)

RF Demo Kit (TX1000)

DSA Accessories (DSA Utility Kit)



DSA PC Software (Ultra Spectrum)

VSWR Bridge (VB1020/VB1030)

▸ Ordering Information

	Description	Order Number
Model	Spectrum Analyzer, 9 kHz to 2 GHz	DSA1020
	Spectrum Analyzer, 9 kHz to 3 GHz	DSA1030
	Spectrum Analyzer, 9 kHz to 3 GHz, with Tracking Generator (Factory Installed)	DSA1030-TG
Standard Accessories	Front Panel Cover	
	Quick Guide (Hard Copy)	
	CDROM (User Guide, Programming Guide)	
	USB Cable	
	Power Cable	
Options	VSWR Bridge(2GHz)	VB1020
	VSWR Bridge(3GHz)	VB1030
	Preamplifier (for DSA1030 and DSA1030-TG)	DSA1030-PA
	Advanced Measurement Kit (for DSA1030 and DSA1030-TG)	DSA1000-AMK
	USB to GPIB Interface Converter for Instrument	USB-GPIB
	DSA PC Software	Ultra Spectrum
	11.1 V, 147 Wh Lithium Battery Set	BAT
	RF Demo Kit (Transmitter)	TX1000
Optional Accessories	Rack Mount Kit	DSA1000-RMSA
	Front Panel Cover	DSA1000-FPCS
	Soft Carrying Bag	DSA1000-SCBA
	Desk Mount Instrument Arm	ARM
	DSA Accessories Package	DSA Utility Kit
Orderable Manuals (Hard Copy)	Quick Guide, Chinese	QGD020
	Quick Guide, English	QGD021
	User's Guide, Chinese	UGD020
	User's Guide, English	UGD021
	Programming Guide, Chinese	PGD020
	Programming Guide, English	PGD021

DSA800 Series Spectrum Analyzer

Features and Benefits

- All-Digital IF Technology
- 9 kHz - 1.5 GHz Frequency Range
- Up to -135dBm Displayed Average Noise Level (DANL)
- -80dBc/Hz @ 10kHz Offset Phase Noise
- Total Amplitude Uncertainty < 1.5dB
- 100Hz Minimum Resolution Bandwidth (RBW)
- 1.5GHz Tracking Generator (DSA815-TG)
- Advanced Measurement functions (Option)
- EMI Filter & Quasi-Peak Detector Kit(Option)
- VSWR Measurement Kit(Option)
- Complete Connectivity: LAN,USB host,USB device,GPIB (option)
- 8 Inch WVGA (800x480) Display
- Compact Size,Light weight design

Key Specifications

Frequency

Frequency		
Frequency Range	DSA815	9 kHz to 1.5 GHz
Frequency Resolution		1Hz
Internal Frequency Reference		
Reference Frequency		10 MHz
Aging Rate		<2 ppm/year
Temperature Stability	20℃ to 30℃	<2 ppm
SSB Phase Noise		
Carrier Offset	10 kHz offset	<-80 dBc/Hz
Bandwidths		
Resolution Bandwidth (-3dB)		100 Hz to 1 MHz, in 1-3-10 sequence
Resolution Bandwidth (-6dB)	Opt	200 Hz, 9 kHz, 120 kHz
RBW Uncertainty		<5%, nominal
Resolution Filter Shape Factor		<5, nominal
(60dB: 3dB)		
Video Bandwidth (-3dB)		1 Hz to 3 MHz, in 1-3-10 sequence

Amplitude

Measurement Range		
Range	10 MHz to 1.5 GHz	DANL to +20 dBm
Maximum rated input level		
DC Voltage		50 V
CW RF Power	RF attenuation = 30dB	+20 dBm (100mW)
Max. Damage Level		+30 dBm (1W)

Note: When input level >+25dBm, the protection switch will be on.

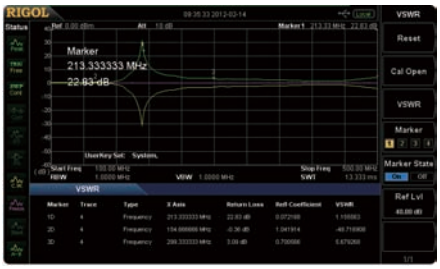
Displayed Average Noise Level (DANL)		
0 dB RF Attenuation, RBW=VBW=100 Hz, Sample Detector, Trace Average ≥ 50		
DANL	100 kHz to 1 MHz	<-90 dBm,
(Preamplifier Off)		typ. -110 dBm
	1 MHz to 1.5 GHz	<-110 dBm+6 x (f/1GHz) dB,
		typ. -115 dBm
DANL	100 kHz to 1 MHz	<-110 dBm
(Preamplifier On)		typ. -130 dBm
	1 MHz to 1.5 GHz	<-130 dBm+6 x (f/1 GHz) dB,
		typ. -135 dBm
Level Measurement Uncertainty		
Level Measurement Uncertainty	95% confidence level, S/N>20 dB, RBW=VBW=1 kHz, preamplifier off, 10 dB RF attenuation, -50 dBm<reference level<0, 10 MHz<fc<1.5 GHz, 20 ºC to 30 ºC	<1.5 dB, nominal

Tracking Generator (for DSA815-TG)

TG Output		
Frequency Range		9 kHz to 1.5 GHz
Output Level		-20 dBm to 0 dBm, in 1 dB steps
Output Flatness	1 MHz to 1.5 GHz, referenced to 50 MHz	±3 dB

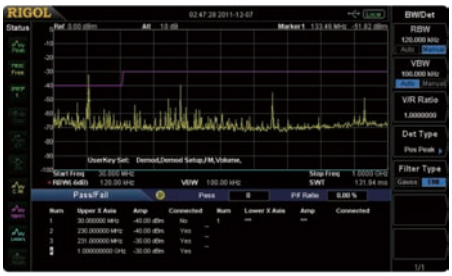
▸ New Functions and Accessories

VSWR Measureasurement

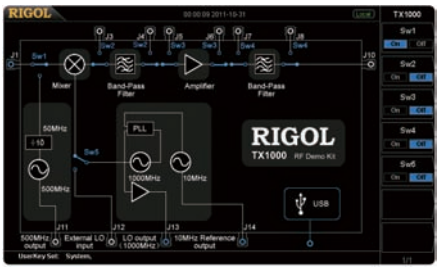


VSWR Bridge (VB1020/VB1030)

EMI Measurement
(EMI Filter & Quasi–Peak & Pass_Fail)



The GUI to control the RF Demo Kit
(Transmitter) directly



▸ Ordering Information

	Description	Order Number
Mode	Spectrum Analyzer, 9 kHz to 1.5 GHz, with preamplifier	DSA815
	Spectrum Analyzer, 9 kHz to 1.5 GHz, with preamplifier, with Factory installed tracking generator	DSA815-TG
Standard Accessories	Quick Guide (Hard Copy)	QGD03X00
	CDROM (User's Guide, Programming Guide)	-
	Power Cable	-
Options	EMI Filter & Quasi-Peak Detector Kit	DSA800-EMI
	VSWR Measurement Kit	DSA800-VSWR
	VSWR Bridge(2GHz)	VB1020
	VSWR Bridge(3GHz)	VB1030
	Advanced Measurement Kit	DSA800-AMK
	DSA PC Software	Ultra Spectrum
	RF Demo Kit (Transmitter)	TX1000
	USB to GPIB Interface Converter for Instrument	USB-GPIB
	Rack Mount Kit	DSA800-RMSA
Optional Accessories	DSA Accessories Package Including: N-SMA Cable, BNC-BNC Cable, N-BNC Adapter, N-SMA Adapter, 75Ω-50Ω Adapter, Antenna 2 (900MHz/1.8GHz), Antenna 2 (2.4GHz)	DSA Utility Kit
Orderable Manuals (Hard Copy)	Quick Guide, Chinese& English	QGD03X00
	User's Guide, Chinese	UGD03000
	User's Guide, English	UGD03100
	Programming Guide, Chinese	PGD03000
	Programming Guide, English	PGD03100

DG5000 Series Function/Arbitrary Waveform Generators

Features and Benefits

- 350 MHz, 250 MHz, 100 MHz, 70 MHz maximum output frequency
- 1 GSa/s sample rate, 14 bits vertical resolution
- Up to 128Mpts Editable Arbitrary Waveform
- Complete Isolation Between Channels and Support Freq/Phase Coupling
- 2+16 Mixed Signal Source (optional)
- Rise/Fall Time of the Pulse could be adjusted separately.
- Support Frequency Hopping and IQ Modulation
- Powerful Waveform Editing PC Software
- Connectivity: USB Host & Device, LAN, GPIB

Key Specifications

Model	DG5352 DG5351	DG5252 DG5251	DG5102 DG5101	DG5072 DG5071
Channel	2/1	2/1	2/1	2/1
Maximum Frequency	350 MHz	250 MHz	100 MHz	70 MHz
Sample Rate	1 GSa/s			
Waveforms				
Standard Waveforms	Sine, Square, Ramp, Pulse, Noise			
Arbitrary Waveforms	Sinc, Exponential Rise, Exponential Fall, ECG, Gauss, HaverSine, Lorentz, Dual-Tone, DC			
Frequency Characteristics				
Sine	1 μHz to 350 MHz	1 μHz to 250 MHz	1 μHz to 100 MHz	1 μHz to 70 MHz
Square	1 μHz to 120 MHz	1 μHz to 120 MHz	1 μHz to 100 MHz	1 μHz to 70 MHz
Ramp	1 μHz to 5 MHz	1 μHz to 5 MHz	1 μHz to 3 MHz	1 μHz to 3 MHz
Pulse	1 μHz to 50 MHz	1 μHz to 50 MHz	1 μHz to 50 MHz	1 μHz to 50 MHz
Noise	250 MHz Bandwidth			
Arb	1 μHz to 50 MHz	1 μHz to 50 MHz	1 μHz to 50 MHz	1 μHz to 50 MHz
Resolution	1 μHz			
Accuracy	±1 ppm, 18 °C to 28 °C			
Sine Wave Spectrum Purity				
Harmonic Distortion	Typical (0 dBm) ≤100MHz: <-45dBc >100MHz: <-35dBc	Typical (0 dBm) ≤100MHz: <-45dBc >100MHz: <-35dBc	Typical (0 dBm) ≤100MHz: <-45dBc	Typical (0 dBm) ≤ 70MHz: <-45dBc
Total Harmonic Distortion	<0.5% (10 Hz to 20 kHz, 0 dBm)			
Spurious (non-harmonic)	Typical (0 dBm) ≤100MHz: <-50dBc >100MHz: -50dBc+6dBc/octave	Typical (0 dBm) ≤100MHz: <-50dBc >100MHz: -50dBc+6dBc/octave	Typical (0 dBm) ≤ 100MHz: <-50dBc	ypical (0 dBm) ≤ 70MHz: <-50dBc
Phase Noise	Typical (0 dBm, 10 kHz deviation) 10 MHz: <-110 dBc			
Signal Characteristics				
Square				
Rise/Fall Time	Typical Value (1Vpp) < 2.5 ns	Typical Value (1Vpp) < 2.5 ns	Typical Value (1Vpp) < 3 ns	Typical Value (1Vpp) <4 ns
Overshoot	Typical Value (1Vpp) < 5%			
Duty Cycle	≤ 10 MHz: 20.0% to 80.0% 10 MHz to 40 MHz: 40.0% to 60.0% > 40 MHz: 50.0% (fixed)			
Non-symmetry	1% of period + 5 ns			
Jitter (rms)	Typical Value (1Vpp) ≤ 30 MHz: 10ppm+500 ps > 30 MHz: 500 ps			
Arb				
Waveform Length	Normal Mode: 2 to 16Mpts Play Mode : 2 to 128Mpts			
Vertical Resolution	14 bits			
Mode	Normal Mode, Play Mode			
Sample Rate	Normal Mode (Waveform Length is from 2 to 16Mpts): 1G Sa/s (fixed) Play Mode (Waveform Length is from 2 to 128Mpts): ≤1G Sa/s (variable)			

Output Characteristics				
Amplitude (into 50 Ω)				
Range	≤ 100 MHz: 5 mVpp to 10 Vpp	≤100MHz: 5mVpp to 10Vpp	5mVpp to 10Vpp	5mVpp to 10Vpp
	≤ 300 MHz: 5 mVpp to 5 Vpp	≤250MHz: 5mVpp to 5Vpp		
	≤ 350 MHz: 5 mVpp to 2 Vpp			
Accuracy	Typical (1 kHz Sine, 0 V Deviation, >10 mVpp, Auto)			
	± 1% of setting ± 1 mVpp			
Amplitude	<10MHz: ±0.1dB	10MHz: ±0.1dB	<10MHz: ±0.1dB	<10MHz: ±0.1dB
Flatness	10MHz to 60MHz: ±0.2dB	10MHz to 60MHz: ±0.2dB	10MHz to 60MHz: ±0.2dB	10MHz to 60MHz: ±0.2dB
(relative to 100	60MHz to 100MHz: ±0.4dB	60MHz to 100MHz: ±0.4dB	60MHz to 100MHz: ±0.4dB	60MHz to 70MHz: ±0.4dB
kHz, 1.25Vpp Sine	100MHz to 250MHz: ±1.0dB	100MHz to 250MHz: ±1.0dB		
wave,	>250MHz: ±1.5dB			
50Ω)				
Units	Vpp, Vrms, dBm, High Level, Low Level			
Protection	Over-temperature protected, Short-circuit protected, Overload relay automatically disables main output			

FH Characteristic				
FH Bandwidth	1.5 MHz to 250 MHz	1.5 MHz to 250 MHz	1.5 MHz to 100 MHz	1.5 MHz to 70 MHz
FH Rate	1 Hop/s to 12.5M Hop/s			
Frequency Point Numbers	4096			
Sequence Length	4096			
Modulation Characteristics				
Modulation Types	AM、FM、PM、ASK、FSK、PSK、PWM、IQ			

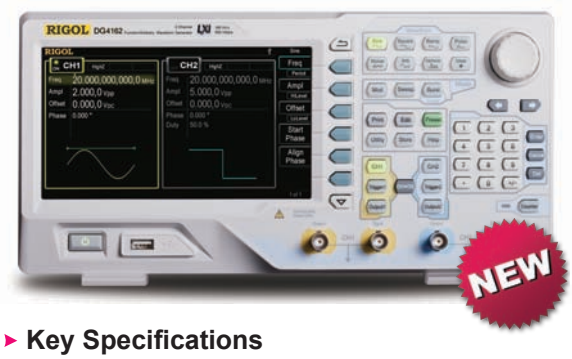
IQ				
Carrier Waveform	Sine (max. 200 MHz)	Sine (max. 200 MHz)	Sine (max. 100 MHz)	Sine (max. 70 MHz)
Source	Internal/External			
Code Pattern	PN Sequence, 4 bits code pattern, User			
IQ Mapping	4QAM, 8QAM, 16QAM, 32QAM, 64QAM, BPSK, QPSK, OQPSK, 8PSK, 16PSK, User			
Code Rate	1 bps to 1 M bps			

Burst Characteristics				
Carrier Waveforms	Sine, Square, Ramp, Pulse, Noise, Arb (except DC)			
Carrier Frequency	1 μHz to 120 MHz	1 μHz to 120 MHz	1 μHz to 100 MHz	1 μHz to 70 MHz
Burst Count	1 to 1 000 000 or Infinite			
Start/Stop Phase	0° to 360°			
Internal Period	1 μs to 500 s			
Gated Source	External Trigger			
Trigger Source	Internal, External or Manual			
Trigger Delay	0 ns to 85 s			

▸ Ordering Information

	Description	Order Number
Model	DG5352 (350 MHz, dual-channel)	DG5352
	DG5351 (350 MHz, single channel)	DG5351
	DG5252 (250 MHz, dual-channel)	DG5252
	DG5251 (250 MHz, single channel)	DG5251
	DG5102 (100 MHz, dual-channel)	DG5102
	DG5101 (100 MHz, single channel)	DG5101
	DG5072 (70MHz, dual-channel)	DG5072
	DG5071 (70MHz, single-channel)	DG5071
Standard	Power Cord	-
Accessories	USB Cable	CB-USB
	BNC Cable (1 meter)	CB-BNC-BNC-1
	Quick Guide (Hard Copy)	-
	Resource CD (including User's Guide and Application Software)	-
	SMB(F) to BNC(M) Cable (1 meter)	CB-SMB(F)-BNC(M)-1
	DG5 PC Software	Ultra Station
Options	Frequency Hopping Module	DG5-FH
	Logic Signal Output Module	DG-POD-A
	Power Amplifier	PA1011
Optional Accessories	SMB(F) to SMB(F) Cable (1 meter)	CB-SMB(F)-SMB(F)-1
	SMB(F) to BNC(F) Cable (1 meter)	CB-SMB(F)-BNC(F)-1
	40 dB Attenuator	ATT-40dB
	Rack Mount Kit	RMK-DG-5

DG4000 Series Function/Arbitrary Waveform Generators



Features and Benefits

- 160 MHz, 100 MHz, 60 MHz maximum output frequency
- 500MSa/s sample rate, 14 bits vertical resolution
- Dual Channel Outputs With Identical Performance
- 2ppm High-frequency Stability
- -115dBc/Hz Low Phase Noise
- Versatile Analog and Digital Modulation functions
- Built-in 150 Waveforms
- Built-in 7digits/s, 200MHz Counter
- 16th Harmonic Generation Function(Std.)
- Powerful Waveform Editing PC Software
- Connectivity: USB Host & Device, LAN
- 7 Inch LCD Display (800x480)

Key Specifications

All the specifications can be guaranteed if the following two conditions are met unless where noted.
· The generator is within the calibration and has performed self-calibration.
· The generator has been working continuously for 30 minutes at specified temperature (18°C ~ 28°C).

All the specifications are guaranteed unless those marked with "typical".

Model	DG4162	DG4102	DG4062
Channel	2	2	2
Maximum Frequency	160MHz	100 MHz	60 MHz
Sample Rate	500 MSa/s		

Waveforms			
Standard waveforms	Sine, Square, Ramp, Pulse, Noise, Harmonics		
Arbitrary Waveforms	150 kinds, including Sinc, Exponential Rise, Exponential Fall, ECG, Gauss, HaverSine, Lorentz, Dual-Tone, DC, etc.		
Frequency Characteristics			
Sine	1 μHz to 160 MHz	1 μHz to 100 MHz	1 μHz to 60 MHz
Square	1 μHz to 50 MHz	1 μHz to 40 MHz	1 μHz to 25 MHz
Ramp	1 μHz to 4MHz	1 μHz to 3 MHz	1 μHz to 1 MHz
Pulse	1 μHz to 40 MHz	1 μHz to 25 MHz	1 μHz to 15 MHz
Harmonic	1 uHz to 80 MHz	1 uHz to 50 MHz	1 uHz to 30 MHz
Noise (-3dB)	120 MHz Bandwidth	80 MHz Bandwidth	60 MHz Bandwidth
Arb	1 μHz to 40 MHz	1 μHz to 25 MHz	1 μHz to 15 MHz
Resolution	1 μHz		
Accuracy	±2ppm，18 °Cto28 °C		

Sine Wave Spectrum Purity	
Harmonic Distortion	Typical (0dBm)
	DC-1MHz: <-60dBc
	1MHz-10MHz: <-55dBc
	10MHz-100MHz: <-50dBc
	100MHz-160MHz: <-40dBc
Total Harmonic Distortion	<0.1%(10Hz-20kHz,0dBm)
Spurious (non-harmonic)	Typical(0dBm)
	≤10MHz <-65dBc
	>10MHz <-65dBc+6dB/octave
Phase Noise	Typical (0 dBm, 10 kHz deviation)
	10 MHz: ≤-115 dBc/Hz

Signal Characteristics			
Square			
Rise/Fall Time	Typical（1Vpp）	Typical（1Vpp）	Typical（1Vpp）
	<8 ns	<10 ns	<12 ns
Overshoot	Typical（1Vpp）		
	<3%		
Duty Cycle	≤10 MHz: 20.0% to 80.0%		
	10 MHz-40 MHz: 40.0% to 60.0%		
	>40 MHz: 50.0%（fixed）		
Non-symmetry	1% of period + 5 ns		
Jitter (rms)	Typical,(1MHz,1Vpp,50Ω)		
	≤5MHz 2ppm+500 ps		
	> 5MHz 500ps		

Arb			
Waveform Length	16k points		
Vertical Resolution	14 bits		
Sample Rate	500M Sa/s		
Harmonic			
Harmonic Order	≤16		
Harmonic Type	Even, Odd, All, User		
Harmonic Amplitude	can be set for all the harmonics		
Harmonic Phase	can be set for all the harmonics		

Output Characteristics			
Amplitude (into 50 Ω)			
Range	≤20MHz：1mVpp to 10Vpp	≤20MHz：1mVpp to 10Vpp	≤20MHz：1mVpp to 10Vpp
	≤60MHz：1mVpp to 5Vpp	≤60MHz：1mVpp to 5Vpp	≤60MHz：1mVpp to 5Vpp
	≤120MHz：1mVpp to 2.5Vpp	≤100MHz：1mVpp to 2.5Vpp	
	≤160MHz：1mVpp to 1Vpp		
Accuracy	Typical (1kHz Sine, 0V Offset, >10mVpp, Auto)		
	± 1% of setting ± 2mVpp		
Amplitude Flatness (relative	Typica	Typica	Typica
1kHz,500mVpp Sine wave,	≤10MHz：±0.1dB	≤10MHz：±0.1dB	≤10MHz：±0.1dB
50Ω)	≤60MHz：±0.2dB	≤60MHz：±0.2dB	≤60MHz：±0.2dB
	≤100MHz：±0.4dB	≤100MHz：±0.4dB	
	≤160MHz：±0.8dB		
Units	Vpp、Vrms、dBm		
Protection	Short-circuit protection, automatically disables main output when overload relay		
Modulation Characteristics			
Modulation Types	AM, FM, PM, ASK, FSK, PSK, BPSK, QPSK, 3FSK, 4FSK, OSK, PWM		

Burst Characteristics			
Carrier Waveforms	Sine, Square, Ramp, Pulse, Noise, Arb (except DC)		
Carrier Frequency	2mHz to 100 MHz	2mHz to 100 MHz	2mHz to 60 MHz
Burst Count	1 to 1 000 000 or Infinite		
Start/Stop Phase	0° to 360°		
Internal Period	2μs to 500 s		
Gated Source	External Trigger		
Trigger Source	Internal, External or Manual		
Trigger Delay	0 ns to 85 s		

Counter Specifications	
Function	Frequency, Period, Positive/Negtive Pulse Width, Duty Cycle
Frequcy Resolution	7 digits/second
Frequcy Range	1uHz to 200MHz

Ordering Information

	Description	Order Number
Model	DG4162 (160 MHz, dual-channel)	DG4162
	DG4102 (100 MHz, dual- channel)	DG4102
	DG4062 (60 MHz, dual-channel)	DG4062
Standard	Power Cord	-
Accessories	USB Cable	CB-USB
	BNC Cable (1 meter)	CB-BNC-BNC-1
	Quick Guide (Hard Copy)	-
	Resource CD (including User's Guide and	-
	Application Software)	
	DG4 PC Software	Ultra Station
Optional Accessories	40 dB Attenuator	ATT-40dB
	Rack Mount Kit	RMK-DG-4

DG2000 Series Function/Arbitrary Waveform Generators

Features and Benefits

- Max. Output frequency 40 MHz
- 100MSa/s Sample Rate
- 14bits Vertical Resolution
- 512kpts Editable Arbitrary Waveform
- Isolated Output
- Powerful Waveform Editing PC Software
- Conectivity: USB Host & Device, LAN, RS232,GPIB

Specifications

Model	DG2041A
Standard Waveform	Sine, Square, Ramp, Triangle, Pulse, White noise, DC, Index up, Index down, Sinc, Electrocardiogram
Frequency characteristics	
Sine	1 μHz ~ 40 MHz
Square	1 μHz ~ 40 MHz
Pulse	500 μHz ~ 16 MHz
Ramp	1 μHz ~ 400 kHz
White Noise	20 MHz bandwidth (-3dB)
Arbitrary Waveform Characteristics	
Frequency Range	1 μHz ~ 12 MHz
Waveform Length	2 pts ~ 512 kpts
Amplitude Resolution	14 bits
Sample Rate	100 MSa/s

Amplitude Characteristics	
Amplitude	20 mVpp ~ 10 Vpp (into 50 Ω)
	40 mVpp ~ 20 Vpp (into open circuit)
Modulation Characteristics	
Modulation Mode	AM, FM, PM, FSK, PWM-internal or external
Frequency of Modulation Waveform	2 mHz ~ 20 kHz (FSK 2 mHz to 100 kHz)
Output Mode	
Burst	Count (1 to 500,000 periods), Infinite, Gate
Sweep	Linear or Logarithmic
Other Parameters	
Connectivity	USB Host, USB Device, RS-232, LAN, GPIB
Power Supply	AC:100V-240V, 45Hz-440 Hz, 50VA Max

Optional Accessories

10W Power Amplifier PA1011

RS-232 Cable

40 dB Attenuator

BNC Cable

DG1000 Series Function/Arbitrary Waveform Generators

Features and Benefits

- Max. Output frequency 25 MHz
- Dual Channel Output
- 100MSa/s Sample Rate
- 14bits Vertical Resolution
- Built-in 6digits/s, 200MHz Counter
- Built-in 48 Waveforms
- Powerful Waveform Editing PC Software
- Connectivity: USB Device and USB Host

Models and Key Specifications

Models	DG1022	DG1022A
Frequency Characteristics		
Sine	1 μ Hz ~ 20MHz	1 μ Hz ~ 25MHz
Square	1 μ Hz ~ 5MHz	1 μ Hz ~ 5MHz
Pulse	500 μ Hz ~ 3MHz	500 μ Hz ~ 5MHz
Ramp	1 μ Hz ~ 150kHz	1 μ Hz ~ 500kHz
Noise(–3dB)	5MHz BW（–3dB）	5MHz BW（–3dB）
Arb	1 μ Hz ~ 5MHz	1 μ Hz ~ 5MHz
Resolution	1 μ Hz	

Sine Wave Spectrum Purity				
Harmonic Distortion	Ch1		Ch2	
	≤1VPP	>1VPP	≤1VPP	>1VPP
DC–1MHz	–45dBc	–45dBc	–45dBc	–45dBc
1MHz–5MHz	–45dBc	–40dBc	–45dBc	–40dBc
5MHz–20MHz	–45dBc	–35dBc	–45dBc	–35dBc
Total Harmonic Distortion	DC ~ 20 kHz，1VPP <0.2%			
Spurious (non–harmonic)	DC ~ 1 MHz < –70 dBc 1 MHz ~ 10 MHz < –70 dBc + 6 dB/ octave			
Phase Noise	10kHz Offset，–108 dBc / Hz，typ.			

Signal Characteristics		
Rise/Fall Time	< 20 ns（10% ~ 90%，typ，1kHz，1 VPP）	
Overshoot	< 5%（Typ.，1kHz，1 VPP）	
Duty Cycle	1 μ Hz~ 3MHz	20% ~ 80%
	3MHz（Excluding）~ 4MHz	40% ~ 60%
	4MHz（Excluding）~ 5MHz	50%
Non–symmetry（@50% Duty cycle）	1% of period + 20ns（typ.，1kHz，1 VPP）	

Output Characteristics	DG1022		DG1022A	
Amplitude（50Ω）	Ch1	Ch2	Ch1	Ch2
	2 mVPP ~ 10 VPP	2 mVPP ~ 3 VPP	≤20MHz: 2 mVPP ~ 10 VPP; >20MHz:2 mVPP ~ 5 VPP;	2 mVPP ~ 3 VPP

Waveform Output	Ch1	Ch2
Impedance	50Ω typ.	50Ω typ.
Protection[2]	Short–circuit protection; auto disable if over loading	Short–circuit protection
Modulation Mode	AM、FM、PM、FSK–intemal or external	

Counter Specification	
Function	Frequency, period, positive/negative Pulse width, Duty cycle
Frequency range	Single channel: 100 mHz ~ 200 MHz
Frequency resolution	6 Digits/Second

DM3068 6½ Digital Multimeter

Features and Benefits

- Real 6 ½ digits readings resolution (2,200,000 Count)
- 0.0035% DC Voltage Accuracy
- Up to 10 K rdgs/s of measurement speed
- True-RMS AC Voltage and Current measurement
- 10A Current Measurement Range
- Dual Measurements Display
- Real-time Trend and Histogram Display functions
- User Definable Any-sensor Measurement function with Ultra Sensor PC software
- Connectivity: USB Host, USB Device,RS-232,GPIB,LAN(LXI-C)

Key Specifications

DC Characteristics

Accuracy Specifications: ± (% of reading + % of range) [1]

Function	Range[2]	Test Current or Burden Voltage	24 Hour[3] T_{CAL} ℃±1 ℃	90 Day T_{CAL} ℃ ± 5 ℃	1 Year T_{CAL} ℃ ± 5 ℃	Temperature Coefficient 0 ℃ to (T_{CAL} ℃ - 5 ℃) (T_{CAL} ℃ + 5 ℃) to 50 ℃
DC Voltage	200.0000mV		0.0020+ 0.0020	0.0030 + 0.0025	0.0040 + 0.0025	0.0005 + 0.0005
	2.000000V		0.0015 + 0.0005	0.0020 + 0.0006	0.0035 + 0.0006	0.0005 + 0.0001
	20.00000V		0.0020 + 0.0004	0.0030 + 0.0005	0.0040 + 0.0005	0.0005 + 0.0001
	200.0000V		0.0020 + 0.0006	0.0040 + 0.0006	0.0050 + 0.0006	0.0005 + 0.0001
	1000.000V[4]		0.0020 + 0.0006	0.0040 + 0.0010	0.0055 + 0.0010	0.0005 + 0.0001
DC Current	200.0000uA	<0.03V	0.010 + 0.012	0.040 + 0.015	0.050 + 0.015	0.0020 + 0.0030
	2.000000mA	<0.25V	0.007 + 0.003	0.030 + 0.003	0.050 + 0.003	0.0020 + 0.0005
	20.00000mA	<0.07V	0.007 + 0.012	0.030 + 0.015	0.050 + 0.015	0.0020 + 0.0020
	200.0000mA	<0.7V	0.010 + 0.002	0.030 + 0.003	0.050 + 0.003	0.0020 + 0.0005
	2.000000A	<0.12V	0.050 + 0.020	0.080 + 0.020	0.100 + 0.020	0.0050 + 0.0010
	10.00000A[5]	<0.6V	0.100 + 0.010	0.120 + 0.010	0.150 + 0.010	0.0050 + 0.0020
Resistance[6]	200.0000Ω	1mA	0.0030 + 0.0030	0.008 + 0.004	0.010 + 0.004	0.0006 + 0.0005
	2.000000kΩ	1mA	0.0020 + 0.0005	0.008 + 0.001	0.010 + 0.001	0.0006 + 0.0001
	20.00000kΩ	100uA	0.0020 + 0.0005	0.008 + 0.001	0.010 + 0.001	0.0006 + 0.0001
	200.0000kΩ	10uA	0.0020 + 0.0005	0.008 + 0.001	0.010 + 0.001	0.0006 + 0.0001
	1.000000MΩ	2uA	0.002 + 0.001	0.010 + 0.001	0.012 + 0.001	0.0010 + 0.0002
	10.00000MΩ	200nA	0.015 + 0.001	0.030 + 0.001	0.040 + 0.001	0.0030 + 0.0004
	100.0000MΩ	200nA || 10MΩ	0.300 + 0.010	0.800 + 0.010	0.800 + 0.010	0.1500 + 0.0002
Diode Test	2.0000V[7]	1mA	0.002 + 0.010	0.008 + 0.020	0.010 + 0.020	0.0010 + 0.0020
Continuity Test	2000.0Ω	1mA	0.002 + 0.010	0.008 + 0.020	0.010 + 0.020	0.0010 + 0.0020

[1] Specifications are for 90-minute warm-up and 100NPLC integration time. For integration time <100NPLC, add the appropriate "RMS Noise Adder" listed in the following table.
[2] 10% overrange on all ranges except DCV 1000V and DCI 10A ranges.
[3] Relative to calibration standards.
[4] For each additional volt over ± 500 V, add 0.03mV error.
[5] For continuous current > 7A DC or 7A AC RMS, 30 seconds ON and 30 seconds OFF.
[6] Specifications are for 4–wire resistance measurement or 2–wire resistance measurement using REL operation. Without REL operation, add 0.2 Ω additional error in 2-wire resistance measurement.
[7] Accuracy specifications for the voltage measured at the input terminal only. 1 mA test current is typical. Variation in the current source will create some variation in the voltage drop across a diode junction.

AC Characteristics

Accuracy Specifications: ±(% of reading + % of range)[1]

Function	Range[2]	Frequency Range	24 Hour[3] T_{CAL}℃ ± 1℃	90 Day T_{CAL}℃ ± 5℃	1 Year T_{CAL}℃ ± 5℃	Temperature Coefficient 0℃ to (T_{CAL}℃ - 5 ℃) (T_{CAL}℃ + 5 ℃) to 50 ℃
True RMS AC Voltage[4]	200.0000 mV	3Hz - 5Hz	1.00 + 0.03	1.00 + 0.04	1.00 + 0.04	0.100 + 0.004
		5Hz -10Hz	0.35 + 0.03	0.35 + 0.04	0.35 + 0.04	0.035 + 0.004
		10Hz - 20kHz	0.04 + 0.03	0.05 + 0.04	0.06 + 0.04	0.005 + 0.004
		20kHz - 50kHz	0.10 + 0.05	0.11 + 0.05	0.12 + 0.05	0.011 + 0.005
		50kHz - 100kHz	0.55 + 0.08	0.60 + 0.08	0.60 + 0.08	0.060 + 0.008
		100kHz - 300kHz	4.00 + 0.50	4.00 + 0.50	4.00 + 0.50	0.20 + 0.02
	2.000000 V	3Hz - 5Hz	1.00 + 0.02	1.00 + 0.03	1.00 + 0.03	0.100 + 0.003
		5Hz - 10 Hz	0.35 + 0.02	0.35 + 0.03	0.35 + 0.03	0.035 + 0.003
		10Hz - 20kHz	0.04 + 0.02	0.05 + 0.03	0.06 + 0.03	0.005 + 0.003
		20kHz - 50kHz	0.10 + 0.04	0.11 + 0.05	0.12 + 0.05	0.011 + 0.005
		50kHz - 100kHz	0.55 + 0.08	0.60 + 0.08	0.60 + 0.08	0.060 + 0.008
		100kHz - 300kHz	4.00 + 0.50	4.00 + 0.50	4.00 + 0.50	0.20 + 0.02
	20.00000 V	3Hz - 5Hz	1.00 + 0.03	1.00 + 0.04	1.00 + 0.04	0.100 + 0.004
		5Hz - 10Hz	0.35 + 0.03	0.35 + 0.04	0.35 + 0.04	0.035 + 0.004
		10Hz - 20kHz	0.04 + 0.04	0.07 + 0.04	0.08 + 0.04	0.008 + 0.004
		20kHz - 50kHz	0.10 + 0.05	0.12 + 0.05	0.15 + 0.05	0.012 + 0.005

		50kHz - 100kHz	0.55 + 0.08	0.60 + 0.08	0.60 + 0.08	0.060 + 0.008
		100kHz - 300kHz	4.00 + 0.50	4.00 + 0.50	4.00 + 0.50	0.20 + 0.02
	200.0000 V	3Hz - 5Hz	1.00 + 0.02	1.00 + 0.03	1.00 + 0.03	0.100 + 0.003
		5Hz - 10Hz	0.35 + 0.02	0.35 + 0.03	0.35 + 0.03	0.035 + 0.003
		10Hz - 20kHz	0.04 + 0.02	0.07 + 0.03	0.08 + 0.03	0.008 + 0.003
		20kHz - 50kHz	0.10 + 0.04	0.12 + 0.05	0.15 + 0.05	0.012 + 0.005
		50kHz - 100kHz	0.55 + 0.08	0.60 + 0.08	0.60 + 0.08	0.060 + 0.008
		100kHz - 300kHz	4.0 + 0.50	4.0 + 0.50	4.0 + 0.50	0.20 + 0.02
	750.000 V[5]	3Hz - 5Hz	1.00 + 0.02	1.00 + 0.03	1.00 + 0.03	0.100 + 0.003
		5Hz - 10Hz	0.35 + 0.02	0.35 + 0.03	0.35 + 0.03	0.035 + 0.003
		10Hz - 20kHz	0.04 + 0.02	0.07 + 0.03	0.08 + 0.03	0.008 + 0.003
		20kHz - 50kHz	0.10 + 0.04	0.12 + 0.05	0.15 + 0.05	0.012 + 0.005
		50kHz - 100kHz	0.55 + 0.08	0.60 + 0.08	0.60 + 0.08	0.060 + 0.008
		100kHz - 300kHz	4.0 + 0.50	4.0 + 0.50	4.0 + 0.50	0.20 + 0.02
True RMS AC Current [8]	200.0000 uA	3Hz - 5Hz	1.10 + 0.06	1.10 + 0.06	1.10 + 0.06	0.200 + 0.006
		5Hz-10Hz	0.35 + 0.06	0.35 + 0.06	0.35 + 0.06	0.100 + 0.006
		10Hz-5kHz	0.15 + 0.06	0.15 + 0.06	0.15 + 0.06	0.015 + 0.006
		5kHz-10kHz	0.35 + 0.70	0.35 + 0.70	0.35 + 0.70	0.030 + 0.006
	2.000000 mA	3Hz - 5Hz	1.00 + 0.04	1.00 + 0.04	1.00 + 0.04	0.100 + 0.006
		5Hz - 10Hz	0.30 + 0.04	0.30 + 0.04	0.30 + 0.04	0.035 + 0.006
		10Hz - 5kHz	0.12 + 0.04	0.12 + 0.04	0.12 + 0.04	0.015 + 0.006
		5kHz - 10kHz	0.20 + 0.25	0.20 + 0.25	0.20 + 0.25	0.030 + 0.006
	20.00000 mA	3Hz - 5Hz	1.10 + 0.06	1.10 + 0.06	1.10 + 0.06	0.200 + 0.006
		5Hz - 10Hz	0.35 + 0.06	0.35 + 0.06	0.35 + 0.06	0.100 + 0.006
		10Hz - 5kHz	0.15 + 0.06	0.15 + 0.06	0.15+ 0.06	0.015 + 0.006
		5kHz - 10kHz	0.35 + 0.70	0.35 + 0.70	0.35 + 0.70	0.030 + 0.006
	200.0000 mA	3Hz - 5Hz	1.00 + 0.04	1.00 + 0.04	1.00 + 0.04	0.100 + 0.006
		5Hz - 10Hz	0.30 + 0.04	0.30 + 0.04	0.30 + 0.04	0.035 + 0.006
		10Hz - 5kHz	0.10 + 0.04	0.10 + 0.04	0.10 + 0.04	0.015 + 0.006
		5kHz - 10kHz	0.20 + 0.25	0.20 + 0.25	0.20 + 0.25	0.030 + 0.006
	2.000000 A	3Hz - 5Hz	1.10 + 0.06	1.10 + 0.06	1.10 + 0.06	0.100 + 0.006
		5Hz - 10Hz	0.35 + 0.06	0.35 + 0.06	0.35 + 0.06	0.035 + 0.006
		10Hz - 5kHz	0.15 + 0.06	0.15 + 0.06	0.15 + 0.06	0.015 + 0.006
		5kHz - 10kHz	0.35 + 0.70	0.35 + 0.70	0.35 + 0.70	0.030 + 0.006
	10.00000 A[6]	3Hz - 5Hz	1.10 + 0.08	1.10 + 0.10	1.10 + 0.10	0.100 + 0.008
		5Hz - 10Hz	0.35 + 0.08	0.35 + 0.10	0.35 + 0.10	0.035 + 0.008
		10Hz - 5kHz	0.15 + 0.08	0.15 + 0.10	0.15 + 0.10	0.015 + 0.008

Additional Low Frequency Errors (% of reading)

Frequency	AC Filter		
	Slow	Medium	Fast
10Hz - 20Hz	0	0.74	--
20Hz - 40Hz	0	0.22	--
40Hz - 100Hz	0	0.06	0.73
100Hz - 200Hz	0	0.01	0.22
200Hz - 1kHz	0	0	0.18
>1kHz	0	0	0

Additional Crest Factor Errors (non-sinewave) [7]

Crest Factor	Error (% of reading)
1 - 2	0.05
2 - 3	0.2
3 - 4	0.4
4 - 5	0.5

[1] Specifications are for 90-minute warm-up, slow ac filter and sinewave input.
[2] 10% overrange on all ranges except ACV 750 V and ACI 10 A ranges.
[3] Relative to calibration standards.
[4] Specifications are for sinewave input >5% of range. For inputs within 1% and 5% of range and <50 kHz, add 0.1% of range additional error. For 50kHz to 100kHz, add 0.13% of range additional error.
[5] ACV 750 range limited to 8x107 Volt-Hz. For input over 300V rms, add 0.7mV error for each additional volt.
[6] For continuous current > DC 7A or AC RMS 7A, 30 seconds ON and 30 seconds OFF.
[7] For frequency below 100 Hz, the specification of slow filter is only for sinewave input.
[8] Specifications are for sinewave input >5% of range. For inputs within 1% to 5% of range, add 0.1% of range additional error. Specifications are typical values for 200uA and 2mA, 2A and 10A ranges when frequency >1kHz.

▸ Ordering Information

Model	Description	Order Number
Standard Accessories	DM3068 (6 ½, dual-display)	DM3068
	Power Cord conforming to the standard of the country	-
	Two Test Leads (black and red)	-
	Two Alligator Clips (black and red)	-
	USB Cable	CB-USB-150
	Four Spare Fuses (two kinds):	-
	2 AC, 250 V, T250 mA fuses	
	2 AC, 250 V, T125 mA fuses	
	Quick Guide	
	Resource CD (User's Guide and Application Software)	-
Optional Accessories	Kelvin Test Clip	-
	RS232 Cable	-
	Rack Mount Kit	RM-DM-3

NOTE: All the standard or optional accessories can be ordered from you local RIGOL Office.

DM3058 5½ Digital Multimeter

Features and Benefits

- Real 5 ½ digits readings resolution(240,000 Count)
- 0.015% DC Voltage Accuracy
- Up to 123 rdgs/s of measurement speed
- True-RMS AC Voltage Current measuring
- 10A Current Measurement Range
- Dual Measurements Display
- User Definable Any-sensor Measurement function with Ultra Sensor PC software
- UltraView PC control and data acquisition Software(Opt.)
- More Features Designed for Production Lines
- Commands compatible with mainstream DMMs
- Connectivity: USB Host, USB Device,RS-232,GPIB,LAN(LXI-C)
- Support Web remote control

Key Specifications

DC Characteristics

Accuracy Specifications: ± (% of reading + % of range) [1]

Function	Range[2]	Test Current or Burden Voltage	1Year 23℃ ± 5℃	TTemperature Coefficient 0℃-18℃ 28℃-50℃
DC Voltage	200.000 mV		0.015 + 0.004	0.0015 + 0.0005
	2.00000 V		0.015 + 0.003	0.0010 + 0.0005
	20.0000 V		0.015 + 0.004	0.0020 + 0.0005
	200.000 V		0.015 + 0.003	0.0015 + 0.0005
	1000.00 V[4]		0.015 + 0.003	0.0015 + 0.0005
DC Current	200.000 µA	<8 mV	0.055 + 0.005	0.003 + 0.001
	2.00000 mA	<80 mV	0.055 + 0.005	0.002 + 0.001
	20.0000 mA	<0.05 V	0.095 + 0.020	0.008 + 0.001
	200.000 mA	<0.5 V	0.070 + 0.008	0.005 + 0.001
	2.00000 A	<0.1 V	0.170 + 0.020	0.013 + 0.001
	10.0000 A[5]	<0.3 V	0.250 + 0.010	0.008 + 0.001
Resistance[4]	200.000 Ω	1 mA	0.030 + 0.005	0.0030 + 0.0006
	2.00000 kΩ	1 mA	0.020 + 0.003	0.0030 + 0.0005
	20.0000 kΩ	100 µA	0.020 + 0.003	0.0030 + 0.0005
	200.000 kΩ	10 µA	0.020 + 0.003	0.0030 + 0.0005
	2.00000 MΩ	1 µA	0.040 + 0.004	0.0040 + 0.0005
	10.0000 MΩ	200 nA	0.250 + 0.003	0.0100 + 0.0005
	100.000 MΩ	200 nA || 10 MΩ	1.75 + 0.004	0.2000 + 0.0005
Diode Test	2.0000 V[6]	1 mA	0.05 + 0.01	0.0050 + 0.0005
Continuity Test	2000 Ω	1 mA	0.05 + 0.01	0.0050 + 0.0005

Remarks:

[1] Specifications are for 0.5 hour warm-up, "Slow" measure and calibration temperature 18℃ - 28℃.

[2] 20% over range on all ranges except for DCV 1000 V, ACV 750 V, DCI 10 A and ACI 10 A.

[3] Specifications are for 4-wire measure or 2-wire measure under "REF" operation. ± 0.2 Ω of extra errors will be generated if perform 2-wire measure without "REF" operation.

[4] Plus 0.02 mV of error per 1 V after the first ±500 VDC.

[5] 30 seconds OFF after 30 seconds ON is recommend for the continuous current that higher than DC 7 A or AC RMS 7 A.

Accuracy specifications are only for voltage measuring at input terminal. The typical value of current under measure is 1 mA. Voltage drop at the diode junction may vary with current supply.

AC Characteristics

Accuracy Specifications: ±(% of reading + % of range)[1]

Function	Range[2]	Frequency Range	1 Year 23℃ ± 5℃	Temperature Coefficient 0℃-18℃ 28℃-50℃
True RMS AC Voltage[3]	200.000 mV	20 Hz – 45 Hz	1.5 + 0.10	0.01 + 0.005
		45 Hz – 20 kHz	0.2 + 0.05	0.01 + 0.005
		20 kHz – 50 kHz	1.0 + 0.05	0.01 + 0.005
		50 kHz – 100 kHz	3.0 + 0.05	0.05 + 0.010
	2.00000 V	20 Hz – 45 Hz	1.5 + 0.10	0.01 + 0.005
		45 Hz – 20 kHz	0.2 + 0.05	0.01 + 0.005
		20 kHz – 50 kHz	1.0 + 0.05	0.01 + 0.005
		50 kHz – 100 kHz	3.0 + 0.05	0.05 + 0.010
	20.0000 V	20 Hz – 45 Hz	1.5 + 0.10	0.01 + 0.005
		45 Hz – 20 kHz	0.2 + 0.05	0.01 + 0.005
		20 kHz – 50 kHz	1.0 + 0.05	0.01 + 0.005
		50 kHz – 100 kHz	3.0 + 0.05	0.05 + 0.010
	200.000 V	20 Hz – 45 Hz	1.5 + 0.10	0.01 + 0.005
		45 Hz – 20 kHz	0.2 + 0.05	0.01 + 0.005

		20 kHz – 50 kHz	0.01 + 0.005	0.01 + 0.005
		50 kHz – 100 kHz	0.05 + 0.010	0.05 + 0.010
	750.000 V	20 Hz – 45 Hz	0.01 + 0.005	0.01 + 0.005
		45 Hz – 20 kHz	0.01 + 0.005	0.01 + 0.005
		20 kHz – 50 kHz	0.01 + 0.005	0.01 + 0.005
		50 kHz – 100 kHz	0.05 + 0.010	0.05 + 0.010
True RMS AC Voltage[5]	20.0000 mA	20Hz – 45 Hz	0.015 + 0.015	0.015 + 0.015
		45 Hz - 2 kHz	0.015 + 0.006	0.015 + 0.006
		2 kHz -10 kHz	0.015 + 0.006	0.015 + 0.006
	200.000 mA	20 Hz - 45 Hz	0.015 + 0.005	0.015 + 0.005
		45 Hz – 2 kHz	0.015 + 0.005	0.015 + 0.005
		2 kHz - 10 kHz	0.015 + 0.005	0.015 + 0.005
	2.00000 A	20 Hz – 45 Hz	0.015 + 0.005	0.015 + 0.005
		45 Hz - 2 kHz	0.015 + 0.005	0.015 + 0.005
		2 kHz – 10 kHz	0.015 + 0.005	0.015 + 0.005
	10.0000 A[5]	20 Hz – 45 Hz	0.015 + 0.005	0.015 + 0.005
		45 Hz - 2 kHz	0.015 + 0.005	0.015 + 0.005
		2 kHz – 5 kHz	0.015 + 0.005	0.015 + 0.005

Additional wave crest factor error (not Sine)[6]	
Wave crest coefficient	Error (% range)
1 - 2	0.05
2 - 3	0.2

Remarks:

[1] Specifications are for 0.5 hour warm-up, “Slow” measure and calibration temperature 18℃ - 28℃.

[2] 20% over range on all ranges except for DCV 1000 V, ACV 750 V, DCI 10 A and ACI 10 A.

[3] Specifications are for amplitude of sine wave input >5% of range. 750 V range limited to 8x107 Volt-Hz. For inputs from 1% to 5% of range and <50 kHz, add 0.1% of range extra error. For 50 kHz to 100 kHz, add 0.13%.

[4] Specifications are for sine wave input >5% of range. 0.1% errors will be added when the range of input sine wave is 1% ~ 5%.

[5] 30 seconds OFF after 30 seconds ON is recommend for the continuous current that higher than DC 7 A or AC RMS 7 A.

[6] For frequency<100 Hz.

▸ Ordering Information

Model	Description	Order Number
Standard	DM3058:5½ digits	DM3058
Accessories	Power Cord conforming to the standard of the country	
	USB Cable	CB-USB-150
	Two Test Leads (black and red)	
	Two Alligator Clips (black and red)	
	Quick Guide	
	Four Spare Fuses	
	Resource CD (User’s Guide and Application Software)	
Optional Accessories	RS232 Cable	
	Kelvin Test Clips	
	UltraView PC control and data acquisition Software	UltraView
	Rack Mount Kit	RM-DM-3

DP1116A/DP1308A Programmable DC Power Supply

Features and Benefits

DP1308A:

- 80W, Triple-channel Output: 6V/5A, +25V/1A and -25V/1A
- Channel Output Isolated
- Low Ripple Noise: <350 uVrms
- Excellent Power Regulation Rate and Load Regulation Rate
- Short Transient Response Time: <50us
- ±25V Channels Voltage Tracking
- OVP/OCP/OTP
- 5 Steps Timing Waveform Output
- Built-in V/A/W Measurement and Waveform Display
- Setup Save and Recall by U-Disc
- 4.3 Inch LCD (480X272)
- Connectivity: USB Host & Device, LAN, GPIB
- Support Web remote control

DP1116A:

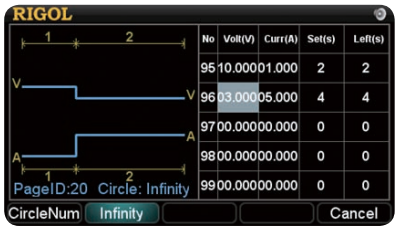
- 160W, Single Output, 16V/10A or 32V/5A
- Channel Output Isolated
- Low Ripple Noise: <350 uVrms
- Excellent Power Regulation Rate and Load Regulation Rate
- Short Transient Response Time: <50us
- Remote Sense Capability
- OVP/OCP/OTP
- 100 Steps Timing Waveform Output
- Built-in V/A/W Measurement and Waveform Display
- Setup Save and Recall by U-Disc
- 4.3 Inch LCD (480X272)
- Connectivity: USB Host & Device, LAN, GPIB

Typical Applications

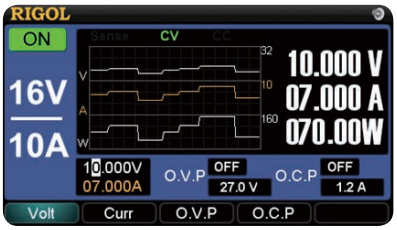
- R&D lab General purpose testing
- Quality Assessment inspection
- Bias power for RF/MW circuits
- Automotive electronic test
- Production testing
- Device or circuit characterization and troubleshooting
- Teaching lab experiments

Intuitive User Interface

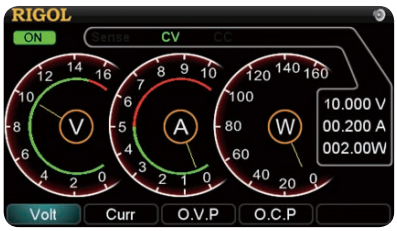
Displays multiple parameters and state graph simultaneously



DP1116A supports up to 100 groups of timing settings



Real time V/A/W waveform display with V/A/W values



DP1116A provides the classical display mode: dial plates with pointer and V/A/W values

Store and recall system setups

RIGOL
-----HELP-----
System online help. Press this button first,then press the needed button to obtain corresponding help information.
Exit

On–line help

▸ Ordering Information

	Description	Order Number
Model	Programmable DC Power (Single Channel)	DP1116A
	Programmable DC Power (Triple-Channel)	DP1308A
Standard	A Power cord	
Accessories	A USB data cable	
	Two shorted devices (only for DP1116A)	
	A CD (including User's Guide and Programming Guide)	
	Four fuses (two of 250 V/T2.5 A and two of 250 V/T4 A): DP1116A	
	Four fuses (two of 250 V/T3 A and two of 250 V/T2 A): DP1308A	
	Rack Mount Kit	RM-DP-1
	An INSTRUCTION	

Warranty

Three-year warranty,excluding probes and accessories.

RIGOL

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